

The 2.1 Å structure of protein F9 and its comparison to L1, two components of the conserved poxvirus entry-fusion complex

Ulrike S. Diesterbeck^{1*}, Apostolos G. Gittis², David N. Garboczi², Bernard Moss¹

¹ Laboratory of Viral Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Maryland, USA

² Structural Biology Section, Research Technologies Branch, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Rockville, Maryland, USA.

* Correspondence: Ulrike.Diesterbeck@gmail.com

Legends to Supplemental files

Supplemental file 1: Multiple sequence alignment of full length F9 and L1 orthologs. For the alignment, the BLOSUM45 matrix was used and aligned with MAFFT³⁸. The default parameters were changed to ‘leave gappy regions’.

Supplemental file 2: Unrooted phylogenetic trees in Newick format calculated by Neighbor joining method and 1000 Bootstraps using 90 conserved amino acid residues (A, F9_L1_conserved) or 177 amino acid residues in all gap-free sites (B, F9_L1_gapfree) and the multiple sequence alignment of Supplemental file 1.

Legend to Supplemental table

Supplemental table 1: The pairwise sequence identities from the multiple sequence alignment (Supplemental file 1) were calculated using ClustalX⁴³.

Legend to Supplemental figures

Supplemental figure 1: Unmodified and scanned Coomassie gels to Figure 1.

Supplemental figure 2: Unrooted tree of F9 and L1 orthologs. The same dataset as presented in Figure 5 was used. Arrows display the division of branching F9 and L1 orthologs.

Supplemental file 1

```
>Query_119423
-----MAETKEFKTLYNLFIDSYLOKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRLSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LDIGECSAPPQ-HMLLQIVNTGSAEA
NCGLQTIVKSLNKIYVPPI--IENRLPYYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----


----->gi|66275845|ref|YP_232930.1| SS bond formation pathway protein
[Vaccinia virus]
-----MAETKEFKTLYNLFIDSYLOKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRLSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LDIGECSAPPQ-HMLLQIVNTGSAEA
NCGLQTIVKSLNKIYVPPI--IENRLPYYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----


----->gi|325558218|gb|ADZ29598.1| SS bond formation pathway protein [Cowpox
virus]
-----MAETKEFKTLYNLFIDSYLOKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRLSFTLMIESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LDIGECSAPPQ-HMLLQIVNTGSAEA
NCGLQTIVKSLNKIYVPPI--IENRLPYYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----


----->gi|325558002|gb|ADZ29383.1| SS bond formation pathway protein [Cowpox
virus]
-----MAETKEFKTLYNLFIDSYLOKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRLSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LDIGECSAPPQ-HMLLQIVNTGSAEA
NCGLQTIVKSLNKIYIPPI--IENRLPYYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----


----->gi|325514063|gb|ADZ24057.1| SS bond formation pathway protein [Cowpox
virus]
-----MAETKEFKTLYNLFIDSYLOKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRLSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LDIGECSAPPQ-HILLQIVNTGSAEA
NCGLQTIVKSLNKIYVPPI--IENRLPYYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----


----->gi|1169132833|gb|ARB50282.1| SS bond formation pathway protein
[Cowpox virus]
-----MAETKEFKTLYNLFIDSYLOKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRLSFTLLIESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LDIGECSAPPQ-HMLLQIVNTGSAEA
NCGLQTIVKSLNKIYVPPI--IENRLPYYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----


----->gi|111184232|gb|ABH08152.1| HSPV049 [Horsepox virus]
-----MAETKEFKTLYNLFIDSYLOKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRLSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LDIGECSAPPQ-HMLLQIVNTGSAEA
NCGLQTIVKSLNKIYVPPI--IENRLPYYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----


----->gi|554571866|gb|AGY97569.1| CPXV056 protein [Cowpox virus]
-----MAETKEFKTLYNLFIDSYLOKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRLSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LNIGECSAPPQ-HMLLQIVNTGSAEA
```

NCGLQTIVKSLNKIYVPP--IENRLPYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|22164637|ref|NP_671550.1| EVM032 [Ectromelia virus]
-----MAETKEFKTLYNLFIDSYLNQKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LNIGECSAPPGQ-HMLLQIVNTGSA
NCGLQTIVKSLNKIYVPP--IENRLPYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|38348914|gb|AAR17890.1| SS bond formation pathway protein
[Vaccinia virus]
-----MAETKEFKTLYNLFIDSYLNQKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSVSKLEKNC--N---AYAEVNNIIDIQK-LDGECSAPPGQ-HMLLQIVNTGSAEA
NCGLQTIVKSLNKIYVPP--IENRLPYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|17974954|ref|NP_536468.1| C15L [Monkeypox virus Zaire96I16]
-----MAETKEFKTLYNLFIDSYLNQKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSVSKLEKNC--N---AYAEVNNIIDIQK-LNIGECSAPPGQ-HMLLQIVNTGSA
NCGLQTIVKSLNKIYVPP--IENRLPYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|44971400|gb|AAS49750.1| RPXV037 [Rabbitpox virus]
-----MAETKEFKTLYNLFIDSYLNQKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LDGECSAPPGQ-HMLLQIVNTGSA
NCGLQTIVKSLNKIYVPP--IENRLPYD-----PWFL---VGVV-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|1210076734|emb|SNB49914.1| CPXV056 protein [Cowpox virus]
-----MAETKEFKTLYNLFIDSYLNQKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRSFTLMIESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LDGECSAPPGQ-HMLLQIVNTGSA
NCGLQTIVKSLNKIYVPP--IENRLPYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLDLKRYGTFLYV-----

>gi|20178423|ref|NP_619844.1| CPXV056 protein [Cowpox virus]
-----MAETKEFKTLYNLFIDSYLNQKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----N
DLPSAVSKLEKNC--N---AYAEVNNIIDIQK-LDGECSAPPGQ-HMLLQIVNTGSA
NCGLQTIVKSLNKIYIPPI--IENRLPYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|90660286|gb|ABD97400.1| unknown [Cowpox virus]
-----MAETKEFKTLYNLFIDSYLNQKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LDGECSAPPGQ-HMLLQIVNTGSA
NCGLQTIVKSLNKIYVPP--IENRLPYD-----PWFL---VCVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|137849|sp|P24361.1|F9_VACCW RecName: Full=Protein F9
-----MAETKEFKTLYNLFIDSYLNQKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSNRSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LDGECSAPPGQ-HMLLQIVNTGSAER
NCGLQTIVKSLNKIYVPP--IENRLPYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|18640278|ref|NP_570434.1| CMLV044 [Camelpox virus]
-----MAETKEFKTLYNLFIDSYLOKLAQY-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSRLSFTLMVESFIEVISLLPEKDRRVIAEEIG-IDL-----D
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LNIGECSAPPGQ-HMLLQIVNTGSAEA
NCGLQTIVKSLNKIYVPPI--IENRLPYYD-----PWFI---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|113195226|ref|YP_717356.1| hypothetical protein TATV_DAH68_049
[Taterapox virus]
-----MAETKEFKTLYNLFIDSYLOKLAQH-S-PTNVTCAIHIGEVIGQ F-
KNCALRITNKCMNSRLSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----D
DVPSVSKLEKNC--N---AYAEVNNIIDIQK-LNIGECSAPPGQ-HMLLQIVNTGSAEA
NCGLQTIVKSLNKIYVPPI--IENRLPYYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|9627554|ref|NP_042077.1| SS bond formation pathway protein
[Variola virus]
-----MAETKEFKTLYNLFIDSYLOKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMSNTRLSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----N
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LNIGECSAPPGQ-HMLLQIVNTGSAGA
NCGLQTILKSLNKIYVPPI--IENRLPYYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|94487114|gb|ABF26214.1| hypothetical protein VARV_KUW67_1629_036
[Variola virus]
-----MAETKEFKTLYNLFIDSYLOKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMSNTRLSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----N
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LNIGECSAPPGQ-HMLLQIVNTGSAGA
NCGLQTILKSLNKIYVPPI--IENRLPYYE-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|544838|gb|AAB29629.1| C13L product [variola virus VAR, India1967,
Peptide, 212 aa]
-----MAETKEFKTLYNLFIDSYLOKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMSNTRLSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----N
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LNIGECSAPPGQ-HMLLQIVNTGSAGA
NCGLDTILKSLNKIYVPPI--IENRLPYYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|94489329|gb|ABF28418.1| hypothetical protein VARV_UNK44_harv_036
[Variola virus]
-----MAETKEFKTLYNLFIDSYLOKLAQH-SIPTNVTCAIHIGEVIGQ F-
KNCALRITNKCMSNTRLSFTLMVESFIEVISLLPEKDRRAIAEEIG-IDL-----N
DVPSAVSKLEKNC--N---AYAEVNNIIDIQK-LNIEECAPPGQ-HMLLQIVNTGSAGA
NCGLQTILKSLNKIYVPPI--IENRLPYYD-----PWFL---VGVA-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|831934475|ref|YP_009143355.1| SS bond formation pathway protein
[Raccoonpox virus]
-----MAETKEFKTLYNLFIDSYLOKLAQN-SIPTNVTCAIHIGEVVGK F-
KNCALRITNKCMNSRLSFTLMTESFIEVIALLPEKDRKAIAEEIG-IDL-----N
DVPSTVSKLEKNC--N---AYADVNIIIDIQK-LDIGECTAPPGQ-HVLLQIVNTGSAEA
NCGLQTIIKSLNKVYVPPI--IENRLPYYD-----PWFI---VGAT-IILVI
FTIAICSR-----RNLALKYRYGTFLYV-----

>gi|1070062745|ref|YP_009282739.1| SS bond formation pathway protein
substrate [Skunkpox virus]
-----MAETREFKTLYNLFMDSYLOKLAQH-SIPTNVTCAIHIGEVVGK F-
KNCALRITNKCVSDSRLSFTLMIESFIEVVSLLPEKDRKAIAEEIG-INL-----D
DVPSTVSKLEKNC--H---AYADVNIIIDIQK-LDIGECMAPPQ-HILLQIVNTGSAEA

NCGLQTIIKSLNKVYVPPI--IENRLPYYE-----PWFL---IGAT-IILVI
FTVAICSR-----RNLALKYRYGTFLYV-----

>gi|1070099067|ref|YP_009281793.1| SS bond formation pathway protein
substrate [Volepox virus]
-----MAETREFKTLYNLFMDSYLQKLAQH-SIPTNVACAIHIGEVIGK F-
KNCALRITNKCCTNSRLSFTLMMESFIEVVSLLPEKDRKAIAEEIG-INL-----D
DPPSAVSKLEKNC--N---AYADVNNIIDIQK-LDIGECMAPPQ-HILLQIVNTGSAEA
NCGLQTIIKSLNKVHVPPI--IENRLPYYE-----PWFL---IGAT-IILVI
FTIAICSR-----RNLALKYRYGTFLYV-----

>gi|1229243048|gb|AST09440.1| SS bond formation pathway protein
substrate [NY_014 poxvirus]
-----MAETKEFKTLYNLFIDRYLQKLAQH-SIPTNISCAIHIGEIIIGK F-
KNCALRITNCKMSNSKLSFTLMIESFIEVVSLLPEKDRKAIAEEIG-IDL-----N
DPPNAVSRLERNC--N---ASADVSNIVDIQE-FNVGECQAPPQ-HILLQIINTGSAEA
NCGLQTIIKSLNRVYVPNT--IDNRLPFYK-----PWFI---AGVV-IILVI
FSIAVCCIR-----RKLALKYRYGTFLYV-----

>gi|1229242845|gb|AST09238.1| substrate for poxvirus SS bond formation
pathway [Murmansk poxvirus]
-----MAETKEFKTLYNLFIDRYLQKLAQH-SIPTNISCAIHIGEIIIGK F-
KNCALRITNCKMSNSKLSFTLMIESFIEVVALPEKDRKAIAEEIG-IDL-----N
DPPNAVSRLERNC--N---ASADVSNIVDIQE-FNVGECQAPPQ-HILLQIINTGSAEA
NCGLQTIIKSLNKVYVPNT--IDNRLPFYK-----PWFI---AGVV-IILVI
FAIAVCCIR-----RKLALKYRYGTFLYV-----

>gi|345107212|ref|YP_004821377.1| substrate for poxvirus SS bond
formation pathway [Yokapox virus]
-----MAETKEFKTLYNLFIDKYLQKLSQH-SIPTNVSCVIHIGEILGN F-
KNCALRITNCKCMNSKLSFTLMIESFIEIASLLPEKDRKAIAEEIG-IDL-----E
DPPHFISRLEKNC--N---ATSDVSNIVDIQE-FNIGECKAPPGH-HINLQIVNTGSAEA
NCGLQTIVRSLNKIHPNI--IDNKLPLFYK-----PWFI---AGAV-IIILII
LVISICCIR-----RKMALKYRYGTFLYI-----

>gi|38229187|ref|NP_938280.1| 24L [Yaba monkey tumor virus]
-----MEEIQRVNTLYNLFVERYLQRLSSH-SVPTNISCGIHIGEVKGE L-
KRCNLRIINKCLNNPRLSFILMIESLLEVIDKLPEREKNEIANEIG-IDI-----H
SNPEIISKLERKC--N---ASSDVNNIINIQS-FDTGNCIAPENT-YILLQVINTGSAES
NCGLEASILRSINKKYIQKNK-IINKPSLTE-----K-PWFI---ICFV-IIIFTV
FVIVISSLK-----RKIGFRYRYGSFLYV-----

>gi|146746361|gb|ABQ43497.1| hypothetical protein [Tanapox virus]
-----MTEIQRVNTLYDLFIEKYLQRLSLH-SVPTNINCIGIHIGEVNGE L-
KRCNLRIINKCLNNPRLSFILMIESFLEVIDTLPEREKKEIADELG-IDI-----N
AGSKIISELERKC--N---ASSDVNNIINIQS-FNAGNCIAPENT-YILLQVINTGSAES
NCGLEAILKSMNKRYIQENK-IINKPLSE-----K-PWFI---ICVV-VIFMV
FVIAISSLR-----RKIGFRYKYGSFLYV-----

>gi|12085007|ref|NP_073409.1| 24L protein [Yabaliike disease virus]
-----MTEIQRVNTLYDLFIEKYLQRLSLH-SVPTNINCIGIHIGEVNGE L-
KRCNLRIINKCLNNPRLSFILMIESFLEVIDTLPEREKKEIANELG-IDI-----N
AGSKIISELERKC--N---ASSDVNNIINIQS-FNAGNCIAPENT-YILLQVINTGSAES
NCGLEAILKSMNKRYIQENK-IINKPLSE-----K-PWFI---ICVV-VIFMV
FVIAISSLR-----RKIGFRYKYGSFLYV-----

>gi|62637409|ref|YP_227407.1| hypothetical protein DpV83gp031 [Deerpox
virus W84883]
-----MEENQVKINTLYNLFVDRYLQNLSLY-SVPVNTTCGIHIGEIRGV F-
NRCKLKIINRCLNNPKLSFVILIKTFKDIINILPQKEREELADEIG-IDLK-----N

DDISYVSELERQC--N---ASADVNNIINIET-FDVGNCAPEDK-YILLQIINSGTAEA
NCGLNAVMNALNKRYVPDPT-IYNSLPYNK-----PWFI---IGSV-IIIFI
FILGICSIK-----RKISYKYKYSPYLYV-----

>gi|115503098|gb|ABI99016.1| hypothetical protein DpV84gp031 [Deerpox
virus W117084]
-----MEENQVKINTLYNLFVDRLQNLQLSLY-SVPVNTTCGIHVGEIRGV F-
NRCKLRIINRCLNNPKLSFVLVKTFKDIVNLIPQKEREELADEIG-IDLK----N
DDVSYVSELERRC--N---ASADVNNIINVET-FDVGNCAPEDK-YILLQIINSGTAEA
NCGLNAVMNALNKRYVPDPT-IYNSLPFSK-----PWFI---IGSV-IIIFI
FILGICSIK-----RKISYKYKYSSYLYV-----

>gi|15150463|ref|NP_150458.1| LSDV024 hypothetical protein [Lumpy skin
disease virus NI2490]
-----MENHFQVDTLYNLFIERYLQNLQLSLY-SVPVNTTCGIHISEIKGT L-
KGCKLKIINLCIDDKELSFYLLIKTFKEFANTLSQNEKYELANEVG-IDLD----N
QDKNYIPEIIRKC--T---SSAAVTNVIDIQT-LDIGECIAPNGK-NILLQIINSGTSEA
NCVMNTIMKSMSNRYTINNY-IDNRIPIFIN-----DVHWFI---FFVL-IIIFI
FLLGLCSIK-----RKINIKYKYGSFLYV-----

>gi|22595717|gb|AAN02749.1| hypothetical protein [Lumpy skin disease
virus]
-----MENHFQVDTLYNLFIERYLQNLQLSLY-SVPVNTTCGIHISEIKGT L-
KGCKLKIINLCIDDKELSFYLLIKTFKEFANTLSQNEKYELANEVG-IDLD----N
QDKNYIPEIIRKC--T---SSAAVTNVIDIQT-FDIGECIAPNGK-NILLQIINSGTSEA
NCVMNTIMKSMSNRYTINNY-IDNRIPIFIN-----DVHWFI---FFVL-IIIFI
FLLGLCSIK-----RKINIKYKYGSFLYV-----

>gi|557370484|gb|AGZ95339.1| hypothetical protein [Goatpox virus FZ]
-----MENHFQVDTLYNLFIERYLQNLQLSLY-SVPVNTTCGIHISEIKGT L-
KGCKLKIINLCIDDKELSFYLLIKTFKEFANTLSQNEKYELANEVG-IDLD----N
QDKNYIPEIIRKC--T---STSAVTNVIDIQT-LDIGECIAPNGK-NILLQIINSGTSEA
NCVMNTIMKSMSNRYTINNY-IDNRIPIFIN-----DVHWFI---FFVL-IIIFI
FLLGLCSIK-----RKINIKYKYGSFLYV-----

>gi|13876676|gb|AAK43564.1| unknown [Lumpy skin disease virus]
-----MENHFQVDTLYNLFIERYLQNLQLSLY-SVPVNTTCGIHISEIKGT L-
KGCKLKIINLCIDDKELSFYLLIKTFKEFANTLSQNEKYELANEVG-IDLD----N
QDKNYIPEIIRKC--T---SSAAVTNVIDIQT-FDIGECIAPNGK-NILLQIINFGTSEA
NCVMNTIMKSMSNRYTINNY-IDNRIPIFIN-----DVHWFI---FFVL-IIIFI
FLLGLCSIK-----RKINIKYKYGSFLYV-----

>gi|148912901|ref|YP_001293215.1| hypothetical protein GTPV_gp021
[Goatpox virus Pellar]
-----MENHFQVDTLYNLFIERYLQNLQLSLY-SVPVNTTCGIHISEIKGT L-
KGCKLKIINLCIDDKELSFYLLIKTFKEFANTLSQNEKYELANEVG-IDLD----N
QDKNYIPEIIRKC--T---STSTVTNVIDIQT-FDIGECIAPNGK-NILLQIINSGTSEA
NCVMNTIMKSMSNRYTINNY-IDNRIPIFIN-----DVHWFI---FFVL-IIIFI
FLLGLCSIK-----RKINIKYKYGSFLYV-----

>gi|21492478|ref|NP_659597.1| hypothetical protein SPPV_21 [Sheeppox
virus]
-----MENHFQVDALYNLFIERYLQNLQLSLY-SVPVNTTCGIHISEIKGT L-
KGCKLKIINLCIDDKELSFYLLIKTFKEFANTLSQNEKYELANEVG-IDLD----N
QDKNYIPEIIRKC--T---SSAAVTNVIDIQT-FDIGECIAPNGK-NILLQIINSGTSEA
NCVMNTIMKSMSNRYTINNY-IDNRIPIFIN-----DVHWFI---FFVL-IIIFI
FLLGLCSIK-----RKINIKYKYGSFLYV-----

>gi|18640107|ref|NP_570181.1| SPV021 hypothetical protein [Swinepox
virus]

-----MENPVRINTLYNVFVERYIENLSIY-SIPINSTCGIHIGEIKGT F-
KRCFLKILNMCINDKELSFNILIKTLKDVTSQKEKEELSKEIG-IDIL----N
NDPKVVEIIRNC--S---SSADVTNIIDIQT-LDVGKCIAPYDK-QILLQIVNSGTAEA
NCVMNSIMNSMNRRYIDNAN-IYNYLNLTN-----R-PWFI---FSII-IIAII
FVIGICSIK-----RRIGIKYKYGTFLYV-----

>gi|377830027|ref|YP_005296228.1| unnamed protein product [Cotia virus
SPAn232]
-----MEKKMQINTLYNLFIDMYLKNLSLY-SIPVNTTCAIHIGEVSGI L-
QRCKINIVNICISNKKLNFMLLVRTFNDIVSTLPEKDKIELADEIG-IDLNN----N
NDHNYISNLERKC--T---ASADIENIIDIQK-FNIGYCIAPEGK-TIQIQVVNSGTAEA
NCAIQTIMNSMNKRYIPDNV-INNKLKMPK-----I-IWII---IITS-ICMIV
FVIGICLLR-----RKINFYRYGNFLYV-----

>gi|1119035593|ref|YP_009329644.1| protein F9 [BeAn 58058 virus]
-----MEMKMHQINTLYNLFINRYLQNLSLY-SIPVNTTCGIHIGEVSGV I-
ERCKINIVNVCIISNKKMNFMLLVRTFNDIVNMMPKDKIELADEIG-IDLNN----S
NDHNYISNLERKC--T---ASADIENVIDIQK-FNIGYCKAPEGK-TIQLQVVNSGTAEA
NCAIQTIMKSMNKRYIPDNL-INNKLKIPN-----I-TWIV---LISS-ICLII
FIIGVCLL-----RKINFYRYGNLYV-----

>gi|9633655|ref|NP_051733.1| M019L [Myxoma virus]
-----MEPTAQNLNTLYTTLFVKRYLHNLSLY-TTPVNTTCAIHIGEIRGV F-
ERCKLQVLNFCSNKELSFKLLVKTREISEILPDKERDALAKEIG-IDLT----K
ADDPNQDVVRNC--N---ASSDINNVIDIQK-FDAGYCVAPENK-HILLQIVNSGSAEA
NCVISSIVRATNKRALPDEF-VNNRLRVSN-----R-PWFI---VFAV-FVLIV
FVICVCSIK-----RKINLKRYRGSGFLYV-----

>gi|539191030|gb|AGU99702.1| M019L [Myxoma virus]
-----MEPTAQNLNTLYTTLFVKRYLHNLSLY-TTPVNTTCAIHIGEVRGV F-
ERCKLQILNFCSNKELSFKLLVKTREISEILPDKERDALAKEIG-IDLT----K
ADDPNQDVVRNC--N---TFSDITNVIDIQK-FDAGYCVAPENK-HILLQIVNSGSAEA
NCVISSIVRATNKRALPDEF-IDNKLRLVSN-----R-PWFI---VFAV-FVLIV
FVICVCSIK-----RKINLKRYRGSGFLYV-----

>gi|982818174|gb|AMB18352.1| M019L [Myxoma virus]
-----MEPTAQNLNTLYTTLFVKRYLHNLSLY-TTPVNTTCAIHIGEVRGV F-
ERCKLQILNFCSNKELSFKLLVKTREISEILPDKERDALAKEIG-IDLT----K
ADDPNQDVVRNC--N---TFSDITNVIDIQK-FDAGYCVAPENK-HILLQIVNSGSAEA
NCVISSIVRATNKRALPDEF-VDNKLRLVSN-----R-PWFI---VFAV-FVLIV
FVICVCSIK-----RKINLKRYRGSGFLYV-----

>gi|9633830|ref|NP_051908.1| gp019L [Rabbit fibroma virus]
-----MEPVQLNTLYTTLFVKRYLHNLSLY-TTPVNTTCAIHIGEIQGV F-
ERCKLQILNFCSNNKELSFKLLLIKTFREISEILPDKERDALAKEIG-IDLT----K
ADDPPSQDIVRNC--N---VFSDVKNVIDIQK-FDAGYCVAPENK-HILLQIVNSGSAEA
NCVISSIVRATNKIALPDEF-INNKLRLVNL-----S-PWFI---VFAV-FVLIV
FVICVCSIK-----RKINLKRYRGSGFLYV-----

>gi|1215207784|gb|ASK51226.1| ss bond formation pathway protein
[Eptesipox virus]
-----MENDPIVVDTLYNLFINRYLQKLGQY-SIPTNIACGIHIGKIIGE F-
DRCALRVTNKCFNNSKLSFKIMIESLKEILLVSEKEKIKILEEIG-IDL----N
NDDKSISKLERNC--K---AYAETSNFIDIDV-FNAGICKAPPGK-FILLQVLNSGTVEA
NCGLETIMKSLNKKILPSYN-TNNKLDLTS-----R-PWFI---AGGV-LILLI
IIFAIICSIK-----KRISVKNYGKYLYV-----

>gi|1046611009|ref|YP_009268732.1| ss bond formation pathway protein
[Pteropox virus]
-----MAATKPVKTLYDMFADRYMELLAIY-AVPTNITCAIHIGNISGT L-

NGCALKIINRCNNNTKLSYSLLTQAFLETISKLPINEQKKIADKVG-IDL-----N
LKPGETSKLEQQC--S---ATASVTSIIDVQN-LNIGTCVSPPGQ-HILIQFINTGSASA
NCGINTILQALVNNYEI-PI-IKPTISFNN-----PWII---ALSV-IIIFI
IIISVSSLR-----RIKLAYKYGATLKV-----

>gi|571797936|ref|YP_008658435.1| envelope protein poxlipid membrane
protein [Squirrelpox virus]
-----MDNTVAEETLYDIFVSKYLQRIAEH-AAPTOCACAVHIGEIRGT M-
RGCELRRVVNRCCMNNARLSFLMRDAFEETVAMLPESEERRAAEVG-FDP-----G
APRDQPSVLERNC--S---ASAAVN DIVDIQK-LDIGECFAPPGR-HILVQIVNSGSAEA
NCGLESVARSLNKRATKELAPLHSSVPLAG-----LWKL---GVAV-LVALI
AVVLVCAMR-----RIALKYRYGAFVYV-----

>gi|1158620706|gb|AQY16587.1| MC016 [Molluscum contagiosum virus
subtype 2]
-----MASPALSTLYGAFVARYLRKLSLY-STTNSVTCAIHVGRI VGT L-
QNCSVRVLNRCNNNDQLSFRLLEAFAETVSLPPKQRAEIAAQVG-IDL-----E
AASHEESRLERKC--R---AHAALVQNLDVQT-LNVGTCIAPPGR-SLAMQVVNSGSAAA
NCGLEAIIRSLSQRPAPFVVDARRALCPGA-----LARL---LAAA-AAVLL
ALLALAALR-----RRLRLRYQYATDLYV-----

>gi|9628948|ref|NP_043967.1| MC016L [Molluscum contagiosum virus
subtype 1]
-----MASAALSTLYGAFVARYLRKLSLY-STTNSVTCAIHVGRI VGT L-
QNCSVRILNRCNNNDQLSFRLLEAFAETVNLPPKQRAEIAAQVG-VDL-----E
AASHEESRLERKC--R---AHAALVQSIDVQT-LNVGTCIAPPGR-SLAIQVVNSGSAAA
NCGLEAIIRSLSQRPAPFVVDARRALCPGA-----LARL---LAAA-AAVLL
ALLALAALR-----RRLRLRYQYATDLYV-----

>gi|115531700|ref|YP_784226.1| hypothetical protein CRV036 [Nile
crocodilepox virus]
-----MGPGPLFDLVVANYLRRRALY-AGVARSDCAIHVGGEIRGR
LGGNCRVRLVNKCNSNAAVSFALLSLEEVLDLAAPADKRAIGRSLG-VDF-----D
TFRSRTTDLERRC--R---AEADLRNDLDVQT-IHLGECDSP--V-PLEFQFVNNSGSAVA
NCGLAAVFRALSARATSAP--VEARVPVGR-----ADRWL A---AGAL-LAIAA
CLAIVALLR-----TTVTLRYRYATYLDGRIKG-----

>gi|659488485|ref|YP_009046346.1| hypothetical protein fep_114
[Pigeonpox virus]
-----MEYQQVLSNLYYLFSEKYLEKLSQH-PDTNVRCGIHIGYLSGD A-
KNCIVSIINACNSNEQKSFQLLIESLIETIENLPEKQQKEIAGNIG-INID-----D
YKAGKKTELQQHC--E---AYANLTQHIDIQH-FNIGTCYSPNDK-YTDIKVINTGSALS
NCGVEVILNKIKTNNTTVP--IDNKLSMDSF-----SIKWVF--IYIV--LCVL
ILLLLGYIY-----RTVRIKYTYGVYI-----

>gi|659488247|ref|YP_009046109.1| hypothetical protein pepv_116
[Penguinpox virus]
-----MENQEVLNSNLYYLFSEKYLEKLSQH-PDTNVRCGIHIGYLSGD A-
KNCIVSIINACNSDEQKSFQLLIESLIETIENLPEKQQKKIAGRIG-INID-----D
YKAGKKTELQQHC--E---AYANLTQHIDIQH-FNIGTCYSPNDK-YTDIKVINTGSALS
NCGVEIILNRIKTNNNTTVP--IDNKLSMDSF-----SIKWVF--IYIV--LCVL
ILLLLGYIY-----RTVRIKYIYGVYI-----

>gi|9634782|ref|NP_039075.1| hypothetical protein FPV112 [Fowlpox
virus]
-----MENQQVISNLYYLFSEKYLEKLNQH-PDTNVRCGIHIGYLSGE A-
KNCIVSIINACNSNEQKSFQLLIESLIETIENLPEKQQKEIAKSIG-INID-----D
YKAGKKTELQQHC--E---AYANLTQHIDIQH-FNIGTCYSPNDK-YTDIKIINTGSALS
NCGVEIILNKKITNNPIVP--IDNKLSMESF-----SIKWF I--IYIV--LCVL
ILLLLGYIY-----RTVRIKYTYGVYI-----

>gi|1173596604|gb|ARE67656.1| SWPV1128 [Shearwaterpox virus]
-----MQNKVLSNLYYLFSEKYLEKLKY-RDTSNIRCGIHIGRLSGD A-
RNCRISIVNACNSDGEKNFELLIESVIETIENFPKNEQDIITADLG-INIE----D
FKLGKKTTELQRHC--E---THAALIQHIDIQN-FNIGTCYSANGK-YTDIKVINTGSALS
NCGVEIVLNKLLSNKSVP--IDNKLMSNNF-----SIKWLI---IYIV--FFLS
ILIIILGYIY-----RTVRLKYIYGVYI-----

>gi|40556077|ref|NP_955162.1| CNPV139 conserved hypothetical protein
[Canarypox virus]
-----MENNQVLSNLYYLFSEKYLEKLKY-QDVSSINCGIHIGRISGY A-
KNCRISIVNACNSDGEKNFQLLEALVETIENFPNTERNRIAADLG-VNIE----D
YKLGKKTDLQLHC--E---SYASLTQHIDIQN-FNIGTCYSPNDK-YVDIKVINTGSAIS
NCGVEIVLNKLLRSNKSVP--IDNKLMSMDTF-----SIKWLV---IYIV--LILS
ILIIILGYIY-----RTVRLKYIYGVYI-----

>gi|946699624|ref|YP_009177103.1| hypothetical protein [Turkeypox
virus]
-----MENQQIISNLYYLFSENYLEKLSHY-PDTSNTRCGIHIGRISGD L-
RNCRINVINACNADGEKSFQLLESMIETVDRLPVKEKKNILDKG-INID----A
YTSGRKTDLQLHC--E---TYASLTQYIDIQN-ITIGSCYSPNNK-YVDIKVINTGNALS
NCGVEIILDKLLRTNFGIP--IDNKLMSMDIF-----SIKWLV---LYII--LCLS
ILFILGYIY-----RTVRLKYVYGVYI-----

>gi|1215835429|ref|YP_009389413.1| vaccinia virus F9Llike protein
[Seal parapoxvirus]
MP---PPTSPI-LRQPDPTLAAPGSLYDVFLAKFLRALAAR-AAPASAACAVRGAVRGR L-
RNCELMVLRNRCHTDASDALALASEALAEATLAALPQADRIAVANELG-VDP-----K APKLLP---
DPACA-S---AESTLAQNVDIQT-LNLGDCGAPDGR-RVRIALVNSGHAAA
NCALARVATALARRTPVRRE---GSLASGS-----MPPWSV---LLSVATVTVI
GAVAVSLLK-----RALKLRFRAASSADRTKLRV-----

>gi|28261211|gb|AAO31709.1| vaccinia virus F9Llike protein [Bovine
papular stomatitis virus]
MP---PPTPPT-PPQPDGVQADTGSLYDAFLARFLRALAAR-SAPASAACAVRGAVRGR L-
RNCELVVLRNRCHTDATEALVLASSALADTLASI PREDRIAVAKELG-IDP-----D KPQLTP---
DPACT-A---AEGALAQSIDLQT-LDIGDCGVPGGR-RVRIALVNSGHAAAT
NCALAKVASALTKRVPARRQ---EGLAAGG-----MPPWSV---LLSVAAVVVV
GTVAVSLLR-----RALRLRFRAFTRLRV-----

>gi|806824981|gb|AKC03555.1| putative membrane protein [Bovine papular
stomatitis virus]
MP---PPTLPT-PPQPDGVRADTGSLYDAFLAQLFLRALAAR-AAPASAACAVRGAVRGR L-
RNCELVVLRNRCHTDATEALALASSALADTLASI PREDRIAVAKELD-IDP-----D KPQLTP---
DPACT-A---AEGALAQSIDLQT-LDIGDCGVPGGR-RVRIALVNSGHAAAT
NCALAKVASALTKRVPVRQQ---EGLAAGG-----MPPWSV---LLSVAAVVVV
GTVAVSLLR-----RALRLRFRAFTRLRV-----

>gi|41057566|ref|NP_958039.1| ORF131 putative membrane protein [Bovine
papular stomatitis virus]
MP---PPTLPT-PPQPDGVRADTGSLYDAFLARFLRALAAR-AAPASAACAVRGAVRGR L-
RNCELVVLRNRCHTDATEALALASSALADTLASI PREDRIAVAKELG-IDP-----D KPQLTP---
DPACT-A---AEGALAQSIDLQT-LDIGDCGVPGGR-RVRIALVNSGHAAAT
NCALAKVASALTKRVPVRQQ---EGLAAGG-----MPPWSV---LLSVAAVVVV
GTVAVSLLR-----RALRLRFRAFTRLRV-----

>gi|806824721|gb|AKC03297.1| putative membrane protein [Bovine papular
stomatitis virus]
MP---PPTPPT-PPQPDGVRADTGSLYDAFLARFLRALAAR-AAPASAACAVRGAVRGR L-
RNCELVVLRNRCHTDATEALALASSALADTLASI PREDRIAVAKELG-IDP-----D KPQLTP---

DPACA-A---AEGALAQSIDLQT-LDIGDCGVPGGR-RVRIALVNSGHAAT
NCALAKVASALTKRPVVRQ---EGLAAGG-----MPPWSV---LLSVAAVVV
GTVAVSLLR-----RALRLRFATRLRV-----

>gi|28261202|gb|AAO31701.1| vaccinia virus F9Llike protein [Orf virus strain D1701]
MP---PRTPPPT-PHSPEPTPAAPGSLYDVFLARFLRQLAAR-AAPASAACAVRGAVRGR L-
RNCELVVLRNRCHADAAGALALASAALAETLAELPRADRLAVARELG-VDP-----E HPELTP---
DPAC--A---GESALAQNIDIQT-LDLGDCGDPKGR-RLRVALVNSGHAAA
NCALARVATALTRRVVPASRH---GLAEGG-----TPPWTL---LLAVAATV
SVVAVSLLR-----RALRVRYQFARPA-ALRA-----

>gi|576864655|gb|AHH34314.1| putative membrane protein [Orf virus]
MP---PRTPPPT-PHSPEPTPAAPGSLYDVFLARFLRRLAAR-AAPASAACAVRGAVRGR L-
RNCELVVLRNRCHADAAGALALASAALAETLAELPRADRLAVARELG-VDP-----E HPELTP---
DPAC--A---GESALAQNIDIQT-LDLGDCGDPKGR-RLRVALVNSGHAAA
NCALARVATALTRRVVPASRH---GLAEGG-----TPPWTL---LLAVAATV
GVVAISLLR-----RALRVRYRFARPA-ALRA-----

>gi|632123611|gb|AHZ33829.1| membrane protein [Orf virus]
MP---PRTPPPTPHSPEPTPAAPGSLYDVFLARFLRRLAAR-AAPASAACAVRGAVRGR L-
RNCELVVLRNRCHADAAGALALASAALAETLAELPRADRLAVARELG-VDP-----E HPELTP---
DPAC--A---GESALAQNIDIQT-LDLGDCGDPKGR-RLRVALVNSGHAAA
NCALARVATALTRRVVPASRH---GLAEGG-----TPPWTL---LLAVAATV
GVVAVSLLR-----RALRVRYRFARPV-ALRA-----

>gi|915529|gb|AAA86391.1| similar to vaccinia virus F9L, SwissProt Accession Number P21018 [Orf virus]
MP---PRTPPPTPHSPEPTPAAPGSLYDVFLARFLRRLAAR-AAPASAACAVRGAVRGR L-
RNCELVVLRNRCHADAAGALALASAALAETLAELPRADKLAVALELG-VDP-----E HPELTP---
DPAC--A---GESALAQNIDIQT-LDLGDCGDPKGR-RLRVALVNSGHAAA
NCALARVATALTRRVVPASRH---GLAEGG-----TPPWTL---LLAVAATV
GVVAISLLR-----RALRVRYRFARPA-ALRA-----

>gi|41018618|gb|AAR98226.1| ORF131 putative membrane protein [Orf virus]
MP---LQTPPPTPHSPEPTPAAPGSLYDVFLARFLRRLAAR-AAPASAACAVRGAVRGR L-
RNCELVVLRNRCHADAAGALALASAALADTLAELPRADKLAVARELG-VDP-----E HPELMP---
DPAC--A---GESALAQNIDIQT-LDLGDCGDPKGR-RLRVALVNSGHAAA
NCALARVATALTRRVVPASRH---GLAEGG-----VPPWTL---LLAVAATV
GVVAISLLR-----RALRVRYRFARPA-ALRA-----

>gi|913204007|gb|AKU76621.1| Membrane protein [Orf virus]
MP---PRTPPPTPHYPEPTPAAPGSLYDVFLARFLRRLAAR-AAPASAACAVRGAVRGR L-
RNCELVVLRNRCHADAADALALASAALAETLATLPAADRLAVARELG-VDP-----E HPELTP---
DPAC--A---GESELAQNIDIQT-LDLGDCGDPKGR-RLRVALVNSGHAAA
NCALARVAAALTRRVVPASQH---GIAEGG-----TPPWTL---LLAVAATV
GVVAVSLLQ-----RALRVRYRFARPA-TLRA-----

>gi|913204395|gb|AKU77006.1| Membrane protein [Orf virus]
MP---PRTPPPTPHYPEPTPAAPGSLYDVFLARFLRRLAAR-AAPASAACAVRGAVRGR L-
RNCELVVLRNRCHADAADALALASAALAETLATLPAADRLAVARELG-VDP-----E HPELTP---
DPAC--A---GESALAQNIDVQT-LDLGDCGDPKGR-RLRVALVNSGHAAA
NCALARVATALTRHVVPASRH---GIAEGG-----TPPWTL---LLAVAATV
GVVAVSLLR-----RALRIRFRYSKPIQTLRV-----

>gi|41057194|ref|NP_957908.1| ORF131 putative membrane protein [Orf virus]
MP---PRTPPPTPHYPEPTPAAPGSLYDVFLARFLRRLAAR-AAPASAACAVRGAVRGR L-
RNCELVVLRNRCHADAADALALASAALAETLAALPAADRLAVARELG-VDP-----E HPELTP---

DPAC--A---GESALAQNIDVQT-LDLGCGDPRGR-RLRVALVNSGHAAA
NCALARVATALTRHVPASRH---GIAEGG-----TPPWTL---LLAVAAVTVL
GVVAISLLR-----RALQIRFRYSKPIQTLRV-----

>gi|913204140|gb|AKU76753.1| Membrane protein [Orf virus]
MP---PRTLPTPPHYPEPTPAAPGSLYDVFLARFLRLAAR-AAPASAACAVRGAVRGR L-
RNCELVVLNRCHADEADALALASAALAETLAALPAADRLAVARELG-VDP-----E HPELTP---
DPAC--A---GESALAQNIDVQT-LDLGCGDPRGR-RLRVALVNSGHAAA
NCALARVATALTRRVPVSQH---GLAEGG-----TPPWTL---LLAVAAVTVL
GVVAISLLR-----RALRIRFRYSKPIQTLRV-----

>gi|913204266|gb|AKU76878.1| Membrane protein [Orf virus]
MP---PRTPPPTPHYPEPTPAAPGSLYDVFLARFLRLAAR-AAPASAACAVRGAVRGR L-
RNCELVVLNRCHADAADALALASAALAETLAELPRADRLAIARELG-VDP-----E KPELTP---
DPAC--A---GESALAQNIDVQT-LDLGDCRDPKGR-RLRVALVNSGHVAA
NCALARVATALTRRVPASRH---GLAEGG-----TPPWTL---LLAVAAVTVL
GVVAISLLR-----RALRIRFRYSKPIQTLRV-----

>gi|289183766|ref|YP_003457307.1| membrane protein [Pseudocowpox
virus]
MPPRPTPRTPPRPEPTPAAPGSLYDVFLARFLRLAAR-AAPASAACAVRGAVRGR L-
RNCELVVLNRCHTDAADSLALASAALAETLAELPRADKLAVAKELG-VDP-----E HPQLTP---
DPAC--A---GESALAQNIDVQT-LDLGCGDPRGR-RLRVALVNSGHAAA
NCALARVATALTRRVPASRH---GLAEGG-----TPPWTL---LLAVAAVTVL
GVVAVSLLR-----RALRIRFQYSKPLNTLRV-----

>gi|288804230|gb|ADC53896.1| membrane protein [Pseudocowpox virus]
MP---PRTPPPTPRPPEPTPAAPGSLYDVFLARFLRLAAR-AAPASAACAVRGAVRGR L-
RNCELVVLNRCHTDAADSLALASAALAETLAELPRADKLAVAKELG-VDP-----E HPQLTP---
DPAC--A---GESALAQNIDVQT-LDLGCGDPRGR-RLRVALVNSGHAAA
NCALARVAAALTRRVPASRH---GLAEGG-----TPPWTL---LLAVAAVTVV
GVVAISLLR-----RALRIRFQYSKPLNTLRV-----

>gi|738809510|ref|YP_009112870.1| putative membrane protein
[Parapoxvirus red deer/HL953]
M-----PTPPRADPAAVADPGSLYDVFLARFLRELAAR-AAPASAACAVRGAVRGR L-
RNCELVVLNRCHTDSADALALASDALAATLSELPRADRLSWARELG-VDP-----Q KPVLAP---
DAACASA---AESALAQSIDLQT-LDLGCGDPRGR-RVRVALVNSGHAST
NCVLARVAAALLRRMPHRPA---SSLAMGG-----MPPWKL---LLAVAAASVV
GVIAVSLLR-----RALRLRFRAAPMASTATHLKI-----

>gi|582973317|ref|YP_009001691.1| SS bond formation pathway protein
[Anomala cuprea entomopoxvirus]
-----MDALGLSIFNDIYNRFITKVNM-VQHTNINCNINVGSIETT
NINNCNILLSNTCISNETSTFTLLLQSIADVIRLLPEERRKIIENALG-VTVD-----D
IDLNNNDVGFYSC--R---NEALLNSNINIES-IIILRNCSSTT---PIDMIFSNTGSVES
NCGLRYVNEALINKNKETI--NYDLKYIFRL-----GLMEYI---IIIL-LIFT
YIYLIMINYIYN---KSKSLYYSRNTVLNNDNILTNIYIRHNNGKRNFY-----

>gi|506498247|ref|YP_008004044.1| SS bond formation pathway protein
substrate (CopF9L) [Adoxophyes honmai entomopoxvirus 'L']
-----MSIGITIFNDVYTRFVDKLNRI-GSTTSINCNIIDIGKISTS
NINNCNIIISNKCVSNEITSFSLLLQSLGEVMILLPEDRKQNQLENLLG-ISTE-----D
IVNESDTGFIQQC--R---AQAIIVDNSINIGK-IEINNCYSRN---PVDFLFLNSGSAES
NCGIKFISDTLLKLNDTSP--ILSLKLLFNI-----KMFDYI---IIIL-LLILL
YIYLIFLSFLLPK----TGKTIYYSRNTILNANDKILENIHLRHFEKGDKFL-----

>gi|506498553|ref|YP_008004349.1| SS bond formation pathway protein
substrate (CopF9L) [Choristoneura biennis entomopoxvirus]
-----MNNRNNNINIGRTIFNDIYTRFIDKLNRI-SNTTNINCNIDINEIRTR

NINNCNIVLSNKCVSNEITSFTLLLQLGEVMLLPEDRRTQIENILG-LKTE-----D
IINENDIGFIHDC--T---TNAIVDNNINIAT-IEINNCYSRF---PTDFLFLNAGSADS
NCGIKYISDALLKLDERQP--ELSLQLLFNI-----KMFDYI---VILI-TIILI
YILFIFLSFLLPR----NNKTIYYSRNTILNKNDKILENIHLRHGDIDRLL-----

>gi|506498856|ref|YP_008004650.1| SS bond formation pathway protein
substrate (CopF9L) [Choristoneura rosaceana entomopoxvirus 'L']
-----MNNRNNNINIGRTIFNDIYTRFIDKLNRI-SNTTNINCNIKINKIITK
NINNCNIVLSNKCVSNEITSFTLLLQLGEVMLLPEDRRIQLENILG-LKTE-----D
IINENDTGFIFHDC--T---TDATVDNNINIATAIEINNCYSRF---PTDFLFLNAGSADS
NCGIKYISDALLKLDERQP--ELSLQLLFNI-----KMFDYI---VILI-TIILI
YILFIFLSFLLPR----NNKTIYYSRNTILNKNDKILENIHLRHGDGINRLL-----

>gi|9964557|ref|NP_065025.1| hypothetical protein AMV243 [Amsacta
moorei entomopoxvirus]
-----MNESQLQTRNSSINIGRTIFNDVYTRFIDKLNRI-SSTTNINCNIINEIRTS
NINNCNIVLSNKCVSNEITSFTLLLQLGETMLLPEDRRTQIENILG-ISTD-----D
IINENDTGFINNC--R---ASAVVDNSINIGT-IEINDCYSNF---PTDFLFLNAGSADA
NCGIKYISDALLKLDNRKP--ELSLQLLFNI-----KMIDYI---IILI-TILSI
YILFIFMSFLIPR----NKKSIYYSRNTILNKNDKILENIYLRLRHGDINNFI-----

>gi|506497986|ref|YP_008003785.1| SS bond formation pathway protein
substrate (CopF9L) [Mythimna separata entomopoxvirus 'L']
-----MNIGRTIFNDIYTRFLDKLNRI-SASANINCIGIDIGKIETS
NITNCNIILSNKCTSNEITSFTLLLQLGEVMLLPRLRIEENILG-IKTE-----D
IIAENDVGFIQDC--K---VQAIVDNNINIGI-IEINNCFSTR---PIDFLFLNSGSVES
NCGIKYISDALLNIDERQQ--QLTLELLFRL-----GMFDYI---LILS-VIILL
YFLFIFLSFLIPR----NYKNMYYYSRNTILNKNDKILENINLRHNI-----

>gi|9631330|ref|NP_048165.1| ORF MSV094 putative membrane protein
(vaccinia F9L), similar to SW:P24361 [Melanoplus sanguinipes
entomopoxvirus]
-----MDQLGLDIYNQIYERYLIKLNRN-TANASINCNIDVGLIETE
NINNCNLTFNECVNSNSTFTLLLESLVEVLKLLPEQSSKIEKKLG-ITLS-----E
LENGEDNGFVQEC--K---AQASVNNSISVNE-IKITNCYSTGSQ-PAEFIFVNSGTVES
NCGMSKISEALQNTNIIIEKEDEVVTNIFGV-----DLLGII---VLLV-TLILA
YIFYCIIVMHIYK----TKSAIYFSRNTIVPEDELILHNINIRRTIPIINDR-----

>gi|51317197|gb|AAT99854.1| putative membrane protein [Diachasmimorpha
longicaudata entomopoxvirus]
-----MDLSGFKEDEFFLYEKIMNTFFTKLYIS-SAIASGTCNITIKRLVLK
NSSTCKIDVKNVCMNLSSKTTSLIESIKDNEKFITKDIKKL-KRFN-I-----D
YKQWDNSELKRTC--E---AFASVENTIDIDT-FSIENCYSSTD-SIASIILLNSDASA
NCVSKNIVKALGASDDGSVA-ELXKIERDKQ-----NNRSII---QAIL-TIFIG
IIFLVGLLVWCVD----FKNIFVFSFKSLLKPPKRI-----

>Query_247142
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHCNLTVKNMCSADADAQDAVLSAATETYSGLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNKLKIQN-VIIDECYGAPGS-PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDMQN--

>gi|66275885|ref|YP_232970.1| IMV membrane protein [Vaccinia virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHCNLTVKNMCSADADAQDAVLSAATETYSGLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNKLKIQN-VIIDECYGAPGS-PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDMQN--

>gi|113195268|ref|YP_717398.1| IMV membrane protein [Taterapox virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHCNLTVKNMCSADADAQDAVLSAATETYSGLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNLKIQN-VIIDECYGAPGS-PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDMQN--

>gi|1210075651|emb|SNB56540.1| CPXV099 protein [Cowpox virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHCNLTVKNMCSADADAQDAVLSAATETYSGLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNLKIQN-VIIDECYGAPGS-PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDM---

>gi|1210075080|emb|SNB57671.1| CPXV099 protein [Cowpox virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHCNLTVKNMCSADADAQDAVLSAATETYSGLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNLKIQN-VIIDECYGAPGS-PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---VVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDMQN--

>gi|732554838|gb|AIZ72837.1| IMV membrane protein [Vaccinia virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHCNLTVKNMCSADADAQDAVLSAATETYSGLTPEQKAYVPAIFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNLKIQN-VIIDECYGAPGS-PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDMQN--

>gi|9627594|ref|NP_042117.1| hypothetical protein VARVgp073 [Variola
virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHCNLTVKNMCSADADAQDAVLSAATETYSGLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNLKIQN-VIIDECYGAPGS-PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDIQN--

>gi|90660326|gb|ABD97440.1| IMV membrane protein [Cowpox virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHCNLTVKNMCSADADAQDAVLSAATETYSSSLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNLKIQN-VIIDECYGAPGS-PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDMQN--

>gi|325558042|gb|ADZ29423.1| IMV membrane protein [Cowpox virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHCNLTVKNMCSADADAQDAVLSAATETYSSSLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNLKIQN-VIIDECYGAPGS-PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDIQN--

>gi|20178464|ref|NP_619885.1| CPXV099 protein [Cowpox virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHCNLTVKNMCSADADAQDAVLSAATETYSSSLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNLKIQN-VIIDECYGAPGS-PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GS-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDIQN--

>gi|1143682|emb|CAA53878.1| unnamed protein product [Variola virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHCNLTVKNMCSADADAQDAVLSAATETYSGLTPEQKTYVPAMFT-AALNIQTSVNT

VVRDFENYVKQTC--N---SSAVVDNKLKIQN- VI IDECYGAPGS- PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDIQN--

>gi|29029580|gb|AAN78221.1| M1R [Monkeypox virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHGCNITVKNMCSADADAQDAVLSAATETYSGLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNKLKIQN- VI IDECYGAPGS- PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMIIATTDIQN--

>gi|17974993|ref|NP_536507.1| M1R [Monkeypox virus Zaire96I16]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHGCNITVKNMCSADADAQDAVLSAATETYSGLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNKLKIQN- VI IDECYGAPGS- PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMIIATTDIQN--

>gi|300872703|gb|ADK39105.1| myristylprotein [Monkeypox virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHGCNITVKNMCSADADAQDAVLSAATETYSGLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNKLKIQN- VI IDECYGAPGS- PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRILFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMIIATTDIQN--

>gi|562817396|gb|AHB35726.1| IMV membrane protein [Vaccinia virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHGCNLAVKNMCSADADAQDAVLSAATETYSGLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNKLKIQN- VI IDECYGAPGS- PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDIQN--

>gi|661921024|gb|AIE40517.1| myristylprotein [Monkeypox virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHGCNITVKNMCSADADAQDAVLSAATETYSGLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNKLKIQN- VI IDECHGAPGS- PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMIIATTDIQN--

>gi|1210074512|emb|SNB53955.1| CPXV099 protein [Cowpox virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHGCNLTVKNMCSADADAQDAVLSAATETYSALTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNKLKIQN- VIMDECYAPGS- PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GS-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDIQN--

>gi|6969736|gb|AAF33948.1| TL1R [Vaccinia virus Tian Tan]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHGCNLTVKNMCSADADAQDAVLSAATETYSGLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTS--N---SSAVVDNKLKIQN- VI IDECYAAPGS- PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDIQN--

>gi|22164677|ref|NP_671590.1| EVM072 [Ectromelia virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCNEIGNFYIR
QNHGCNLTVKNMCSADADAQDAVLSAATETYSGLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNKLKIQN- VI IDECYGAPGS- PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GA-----GVQFYM---IVIG-VIILA
ALFMYYAKRMLFT--STHDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDIQN--

>gi|1070062787|ref|YP_009282781.1| imv membrane protein [Skunkpox virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHCNLSVKNMCSADADAQLDAVLSAATETYSSLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAIVDNKLKIQN-VIIDECYGAPGS-PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYM---IVIA-VVILA
ALFMYYAKRMLFT--STNDKIKIILANKENVHWTYMDTFF---RTSPMVIATTDIQN--

>gi|18640320|ref|NP_570476.1| CMLV086 [Camelpox virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASTQTKCDVEIGNFYIR
QNHCNLTVKNMCSADADAQLDAVLSAATETYSSLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAVVDNKLKIQN-VIIDECYGAPGS-TTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQVA----GT-----GVQFYI---IVIG-VIILA
ALFMYYAKRMLFT--STNDKIKLILANKENVHWTYMDTFF---RTSPMVIATTDMQN--

>gi|1070099109|ref|YP_009281835.1| imv membrane protein [Volepox virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHCNLSVKNMCSADADAQLDAVLSAATETYSSLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVKQTC--N---SSAIVDNKLKIQN-VIIDECYGAPGS-PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPKQTT----GA-----GVQFYM---IVIA-VVILA
ALFMYYAKRMLFT--STNDKIKIILANKENVHWTYMDTFF---RTSPMVIATTDMQN--

>gi|831934516|ref|YP_009143396.1| IMV membrane protein [Raccoonpox virus]
-----MGAAASIQTTVNTLSERISSKLEQEANASAQTKCDIEIGNFYIR
QNHCNLTVKNMCSADADAQLDAVLSAATETYSSLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVRQTC--N---SSAVVDNKLKIQN-VIMDECYGAPGA-PTNLEFINTGSSKG
NCAIKALMQLTTKATTQIAPRQIA----GT-----GVQFYI---IAIA-VVILA
VLFMYYAKRMLFT--STNDKIKIILANKENVHWTYMDTFF---RTSPMVIATTDMQN--

>gi|345107256|ref|YP_004821421.1| IMV membrane protein [Yokapox virus]
-----MGAAASIQTTVNTLSERISSKLIQEANASAETKCDIDIGSFIIR
KNNGCNVTVKNLCSANADAQLEAVLSAATETYASLTPEQKAYVPAMFT-AALNIQTSVNT
VVRDFENYVRQTC--N---SSAVVDNKLKIQN-VFIDECKNAIPGE-NTTLEFINAGTSKG
NCAIKSLLDVTKATTQITPKQIA----GT-----GIQFYI---IAIV-VIVLA
FLFIYYAKRMLFT--STNDKIKLILANKENVHWTYMDVFF---RNNSPLVMTEDDL--

>gi|1236513682|ref|YP_009408468.1| IMV membrane protein [NY_014 poxvirus]
-----MGAAASIQTSVNTLSERISTKLIQEANASAETNCEIEIGSFIIR
KNNGCNVTVKNLCSANADAQLEAVLSAATETYSSLTPEQKAYVPAMFT-AALNIQTTVNT
VVRDFENYIKQTC--N---SDAVVNNKLKIQN-IFIDECTALPGS-NTTLEFINTGTSKG
NCAIKALMDITTKANTQIAPRQIA----GT-----GVQFYI---IAIA-VVVLG
FLFIYYAKRMLFT--STNDKIKIILANKENVHWTYMDVFF---RNNSPLVMNTDDE--

>gi|1236513479|ref|YP_009408266.1| IMV membrane protein [Murmansk poxvirus]
-----MGAAASIQTSVNTLSERISTKLIQEANASAETNCEIEIGSFIIR
KNNGCNVTVKNLCSANADAQLEAVLSAATETYSSLTPEQKAYVPAMFT-AALNIQTTVNT
VVRDFENYVKQTC--N---SDAVVNNKLKIQN-IFIDECTALPGS-NTTLEFINTGTSKG
NCAIKALMDITTKANTQIAPRQIA----GT-----GVQFYI---IAIV-VVVLG
FLFIYYAKRMLFT--STNDKIKIILANKENVHWTYMDVFF---RNSSPLVMNTDDE--

>gi|377829969|ref|YP_005296264.1| unnamed protein product [Cotia virus SPAn232]
-----MGVAASVQTTVNTLNEKISTSLEQTAEASATTKCDIDIGNIIFK
ENKGNCNVTVKNLCSANATAQLDSVVKAATETYDSLTPEQKAYVPGMLT-AALNIQTSVNT
VIKDFENHVRQKC--T---SKAVTDNKLKIQN-ILIDECGTPSG-PTNLEFINTGTSQG
ICAIKTLMDVTTKATSKIAPSQSA----GS-----GFQYYI---IGFV-VIILA

MLFLYYAKKMLFT--STNDKIKIILANKPDVHWTSYIDTFF---SNPTTVV-----

>gi|1119035641|ref|YP_009329692.1| protein L1 [BeAn 58058 virus]
-----MGAAASIQTTVNTLNEKISSTLEQTAEASATTKCDVDIGNIIFK
QNRCGNVTVKNLCSSNATAQLDSVVKAATETYESLTPDQKAYVPGMT-AALNIQTSVNT
VIKDFENHVQKC--T---SKAVTENKLKIQN-ILIDDCAGTPSG-PTNLEFINTGTSQG
ICAIKTLMDVTTKATSKIAPSQSA----GS-----GFQYYI---IGFV-IVILA
MLFLYYAKKMFFT--STNDKIKIILANKPDVHWTSYIDTFF---SNPTTVV-----

>gi|115503135|gb|ABI99053.1| myristylated IMV envelope protein
[Deerpox virus W117084]
-----MGAAASVQTTVNTLNEKISNKLEQTAEASAIAKCDIEIGSITFR
QNRCGNVTVKNLCSAKADAQLDAVLKAATETYDSLTPEQKAYVPGMT-AALNIQTSVNT
VVKDFESYVKQKC--T---SKAVIDNKLKIQN-IFIDECAAPPGT-PTNFEFINSGTSQG
ICAIKTLMDVTTKASTTISPSQSS----GY-----GYQAYV---IAAV-AVIFA
MLFLYYAKRMLFM--STQDKIKIILANKPEVHWTSYLDTFF---SNIPTIVDENNAK---

>gi|62637446|ref|YP_227444.1| Myristylated IMV envelope protein
[Deerpox virus W84883]
-----MGAAASVQTTVNTLNEKISNKLEQTAEASAIAKCDIEIGSITFR
QNRCGNVTVKNLCSAKADAQLDAVLKAATETYDSLTPEQKAYVPGMT-AALNIQTSVNT
VVKDFESYVKQKC--T---SKAVIDNKLKIQN-IFIDECAAPPGT-PTNFEFINSGTSQG
ICAIKTLMDVTTKASTTISPSQSS----GY-----GYQAYV---IAAV-AVIFA
MLFLYYAKRMLFM--STQDKIKIILANKPEVHWTSYLDTFF---SNIPTIVDENNAK---

>gi|148912937|ref|YP_001293251.1| hypothetical protein GTPV_gp056
[Goatpox virus Pellar]
-----MGAAASIQTTVNTLNEKISSKLEQTAEATAEAKCDIEIGSIVFR
QNKGCGNVTVKNLCSSKAESQLDAILKAATETYDLLTPDQKAYVPGMT-AALNIQTSVNT
VVKDFETYVKQKC--T---SKSVIDNKLKIHN-IFIDECAAPTGT-TTNFEFINSGTSQG
ICAIKTLMDVTTKASTKISPSQSS----GY-----GYQFYI---IAAV-VVILS
MVFLYYVKKMLFT--STKDKIKIILANKPEVHWTSYLDTFF---SNTPTIIEK-----

>gi|154268989|gb|ABS72327.1| L1R [Goatpox virus]
-----MGAAASIQTTVNTLNEKISSKLEQTAEATSEAKCDIEIGSIVFR
QNKGCGNVTVKNLCSSKAESQLDAILKAATETYDLLTPDQKAYVPGMT-AALNIQTSVNT
VVKDFETYVKQKC--T---SKSVIDNKLKIHN-IFIDECAAPTGT-TTNFEFINSGTSQG
ICAIKTLMDVTTKASTKISPSQSS----GY-----GYQFYI---IAAV-VVILS
MVFLYYVKKMLFT--STKDKIKIILANKPEVHWTSYLDTFF---SNTPTIIEK-----

>gi|15150499|ref|NP_150494.1| LSDV060 putative myristylated IMV
envelope protein [Lumpy skin disease virus NI2490]
-----MGAAASIQTTVNTLNEKISSKLEQTAEATAEAKCDIEIGSIVFR
QNKGCGNVTVKNLCSSKAESQLDAILKAATETYDSLTPDQKAYVPGMT-AALNIQTSVNT
VVKDFETYVKQKC--T---SKSVIDNKLKIHN-IFIDECAAPTGT-TTNFEFINSGTSQG
ICAIKTLMDVTTKASTKFSPSQSS----GY-----GYQFYI---IAAV-VVILS
MVFLYYVKKMLFT--STKDKIKIILANKPEVHWTSYLDTFF---SNTPTIIEK-----

>gi|21492513|ref|NP_659632.1| Myristylated IMV envelope protein
[Sheeppox virus]
-----MGAAASIQTTVNTLNEKISSNLEQTAEATAEAKCDIEIGNIVFR
QNKGCGNVTVKNLCSSKAESQLDAILKAATETYDSLTPDQKAYVPGMT-AALNIQTSVNT
VVKDFETYVKQKC--T---SKSVIDNKLKIHN-IFIDECVAPGT-TTNFEFINSGTSQG
ICAIKTLMDVTTKASTKFSPSQSS----GY-----GYQFYI---IAAV-VVILS
MVFLYYVKKMLFT--STKDKIKIILANKPEVHWTSYLDTFF---SNTPTIIEK-----

>gi|18640143|ref|NP_570217.1| SPV057 putative myristylated IMV
envelope protein [Swinepox virus]
-----MGAAASIQTTVNTLNQKISNKLEQSAEASAEEAKCDIEIGNITFR
QNRCGNVIVKNLCSAQANAQLDAVIKAATETYDSLTPDQKAYVPGMT-AALNIQTSVNT

VVKDFETYVKQTC--T---SKSVIDNKLKIRN-IFIDCAAPAGT-TTNFEFINSGTSQG
ICAIKTLMDVTTKASTNIAPNQSS----GY-----GYQYYI---IAVV-IVILS
MIFLYYAKKMLFT--STKDKIKLILASKPDVHWTSYIDTFF---SNVPTVVEEPKLN---

>gi|38229222|ref|NP_938315.1| 60R [Yaba monkey tumor virus]
-----MGAAASIQTTVNTLNEKISNTLEQASAEATNC DIEIGSIVFR
QNRCGCNTVKNLCSSDADAQLEAVIKAANETYESLTPEQKAYVPGMT-AALNIQTSVNT
VVKDFENHVVKQTC--N---SKSVVDNKLKIQN-IFIDECAAPP GT-ITNFEFINSGTSKG
ICAIKTLMNVTTKASTNISPQSS----GY-----GYQVYV---IAAI-AIVLS
MIFLYYAKKMFFT--STKDKIKLILASKPEVHWSSYIDTFF---SDSPTVIENIN---

>gi|12085043|ref|NP_073445.1| 60R protein [Yabavirus]
-----MGAAASIQTTVNTLNEKISNTLEQDASATAQANCDIEIGSIIFR
QNRCGCNTVKNLCSANADAQDAVLKAASDTYESLTPEQKAYVPGMT-AALNIQTSVNT
VVKDFENHVVKQKC--N---SQSVVDNKLKIQN-IFIDECSAPSGT-TTNFEFINSGTSKG
ICAIKTIMDVTTKASTNISPQES----GY-----GYQVYV---IAAI-AIILS
MIFLYYAKKMFFT--STKDKIKLILASKPEVHWSSYIDTFF---SNSPTVIENIN---

>gi|1237089682|ref|YP_009408015.1| Myristylated IMV envelope protein
[Eptesipox virus]
-----MGAAASIQTTVNTLSEKISNKLEQTAEATASTNC DIEIGNIIFR
QNKGCGNTVKNLCSSKADAQLDAVVKAAAETFETLTPEQKAYVPSLFT-AALNIQTSVNT
VVKDFETYVKQKC--K---SDSVIKNKLKVQN-ILIDECAASPPGT-TTNFEFINSGTSQG
ICAIKTLMDVTTKASTNISPQST----GF-----GYQYYI---IAAV-VVILA
LLFVYYTKRMFF--STQDKIKVILASKPDVHWTSYIDTFF---SHVPTVVDVS RQN---

>gi|539191066|gb|AGU99738.1| m55R [Myxoma virus]
-----MGAAASVQTTVNTLTQKISSSSLEQTSSASAQTNC EIGNISFK
KNTGCNCNTVKNLCSANANSQLD SVLSAATETYDSLTP EQKAYVPSLMT-AALNIQTSVNT
VVKDFENYVRQKC--T---ADSVVNNKLKVQN-IVIDECAAADGS-STNFEFINTGSSQG
ICAVKTLLDVTTKASTDISPRQSS----GY-----GYQFYV---IAAV-VLILS
MVFMYYAKKMLFT--STKDKIKIILANKPDVHWTSYLDTFF---STTHSV---

>gi|9633691|ref|NP_051769.1| m55R [Myxoma virus]
-----MGAAASVQTTVNTLTQKISSSSLEQTSSASAQTNC EIGNISFK
KNTGCNCNTVKNLCSANANSQLD SVLSAATETYDSLTP EQKAYVPSLMT-AALNIQTSVNT
VVKDFENYVRQKC--T---ADSVVNNKLKVQN-IVIDECAAADGS-STNFEFINTGSSQG
ICAVKTLLDVTTKASTDISPRQSS----GY-----GYQFYV---IAAV-VLILS
MIFMYYAKKMLFT--STKDKIKIILANKPDVHWTSYLDTFF---STVHSV---

>gi|9633864|ref|NP_051944.1| gp055R [Rabbit fibroma virus]
-----MGAAASVQTTVNTLTQKISSSSLEQTSSASAQTNC EIGNISFK
KNNGCNCNTVKNLCSANANSQLESVLSAATETYDSLTP EQKAYVPSLMT-AALNIQTSVNT
VVKDFENYVRQKC--T---ADSVVNNKLKVQN-IIIDECAAADGS-MTNFEFINTGSSQG
ICAVKTLLDVTTKASTDISPRQSS----GY-----GYQFYI---IAAV-VLILS
MVFIYYAKKMLFT--STKDKIKIILANKPDVHWTSYLDTFF---STTHSI---

>gi|571797980|ref|YP_008658479.1| myristylprotein / IMV protein
[Squirrelpox virus]
-----MGASLSLQTTNVV SERIRNNLETTAGASATANC NVNIGSIIFH
KNNGCNCNTVKNMC SANADS AQA LEAVLKAATET YEGLTTEQKAYVPGMT-TALNIQTSVST
VVKDFETHVROSC--N---STAVVNDNITVQN-IQVDECTAPAGS-LITMEFVNTGTSKG
NCAVKALMDVLTKSSTMATQQAA----GV-----GLNPYL---IAAA-VAILV
LVLLYYAKKMLFT--STQDKIKIILANKPDVHWTTYLDTFF---SNSPSMVTG---

>gi|1158620761|gb|AQY16642.1| MC069 [Molluscum contagiosum virus
subtype 2]
-----MGAAASVQTTVTLNERISNKLEQTA S A SATANC DV SIGNIYFG
RNHGCNCNTVKNMC SANADS AQA LEAVIKAATEVYNELSEEQKAYAPSLLT-AALNIQTNVST
VTKDFETHVVKQAC--K---ADAVVNNTIKVQN-LRVDECSAPSGM-LMTFEFINTGTSVG

NCAMKAVLDVLTKSSDRISGVQTA-----GT-----DIRWYV---IVAA-VVACV
LLVLWYAKRMLFT--STQDKIKLILASKPDVHWTTFLEDTFF---SSAPTVL-----

>gi|9629001|ref|NP_044020.1| MC069R [Molluscum contagiosum virus subtype 1]
-----MGAAASVQTTVTTLNERISNKLEQSASASATANCVSIGNIYFG
RNHGCNVLVKNMCSANADAQLDAIVKAATEEVYNELSEEQKAYAPSLLT-AALNIQTNVST
VTKDFETYVKQAC--K---ADAVVNNTIKVQN-LRVDECSAPSGM-LMTFEFINTGTSVG
NCAMKALLDVLTSSDRISGVQNT-----GT-----DIRWYV---IVAA-VVACV
LLVLWYAKRMLFT--STQDKIKLILASKPDVHWTTFLEDTFF---SSAPTVL-----

>gi|659488260|ref|YP_009046122.1| myristylated protein [Pinguinpox virus]
-----MGAAASIQTIVTTINKKISEKLEQSASASATANCDINIGNIIFK
KNKGCVNLVKNMCSANASAQLDAIVSAVREVDQLTEQQKAYAPSLLT-AALNIQTNVST
ITQDFETYIKQKC--N---SEAVVNNTINVQS-LEVDECSAPPQ-IMTFEFINTGTATG
NCAMKSVLDVLTKSSDRVSGNQSA----GS-----DFAKYL---YIIG-GIICF
LILYYAKKLFFM--STNDKVKVILAKKPDVHWTYIDTYF---RSSPVLV-----

>gi|659488498|ref|YP_009046359.1| myristylated protein [Pigeonpox virus]
-----MGAAASIQTIVTTINKKISEKLEQSASASATANCDINIGNIIFK
KNKGCVNLVKNMCSANASAQLDAIVSAVREVDQLTEQQKAYAPSLLT-AALNIQTNVST
ITQDFETYIKQKC--N---SEAVVNNTINVQS-LEVNECSAPPQ-IMTFEFINTGTATG
NCAMKSVLDVLTKSSDRVSGNQSA----GS-----DFAKYL---YIIG-GIICF
LILYYAKKLFFM--STNDKVKVILAKKPDVHWTYIDTYF---RSSPVLV-----

>gi|9634798|ref|NP_039091.1| Myristylated membrane protein [Fowlpox virus]
-----MGAAASIQTIVTTINKKISEKLEQTASASATANCDINIGNIIFK
KNKGCVNLVKNMCSANASAQLDAIVSAVREVDQLTEQQKAYAPSLLT-AALNIQTNVST
ITQDFETYIKQKC--N---SDAVINNIINVQS-LEVDECSAPPQ-IMTFEFINTGTATG
NCAMKSVLDVLTKSSDRVSGNQST----GN-----DFSKYL---YIIG-GIICF
LILYYAKKLFFM--STNDKVKVLLAKKPDVHWTYIDTYF---RSSPVLV-----

>gi|221404|dbj|BAA00225.1| unnamed protein product [Fowlpox virus]
-----MGAAASIQTIVTTINKKICEKLEQTASASRTANCDINIGNIIFK
KNKGCVNLVKNMCSANASAQLDAIVSAVREVDQLTEQQKAYAPSLLT-AALNIQTNVST
ITQDFETYIKQKC--N---SDAVINNIINVQS-LEVDECSAPPQ-IMTFEFINTGTATG
NCAMKSVLDVLTKSSDRVSGNQST----GN-----DFSKYL---YIIG-GIICF
LILYYAKKLFFM--STNDKVKVLLAKKPDVHWTYIDTYF---RSSPVLV-----

>gi|1173596344|gb|ARE67397.1| SWPV2ORF161 [Shearwaterpox virus]
-----MGAAASIQTIVTTLNKRISKEKLEQSASASATANCDIHIGNILFK
KNRGCVNLVKNMCSANASAQLDAIVSAVKEVYNDLSEQKAYAPSLLT-AALNIQTNVST
ITQDFETYLKQKC--N---SDAVIKNTLSIQS-LEVDDCSAPPQ-IMTFEFINTGTATG
NCAMKSVLDVLTKSSDRVSGNQES----GN-----DFVKYL---YIIG-GVICF
LILYYIKKLFFM--STNDKVKVILAKKPDVHWSTYLDTYF---RSSPVII-----

>gi|40556111|ref|NP_955196.1| CNPV173 putative myristylated IMV envelope protein [Canarypox virus]
-----MGAAASIQTIVTTLNKRISKEKLEQSQAQASAAANCDIHIGNILFK
KNRGCVNLVKNMCSANASAQLDAIVSAVKEVYNDLSEQKAYAPSLLT-AALNIQTNVST
ITQDFETYLKQKC--N---SDAVIKNTLSIQS-LEVDDCSAPPQ-IMTFEFINTGTATG
NCAMKSVLDVLTKSSDRVSGNQES----GN-----DFVKYL---YIIG-GVICF
LILYYIKKLFFM--STNDKVKVILAKKPDVHWSTYLDTYF---RSSPVII-----

>gi|1174036708|gb|ARF02733.1| SWPV1149 [Shearwaterpox virus]
-----MGAAASIQTIVTTLNKKISDKLEQTAQASASTNCDIHIGNILFK
KNRGCVNLVKNMCSANSAAQLDAIVSAVKDVFYNDLSSSEQKAYAPSLLT-AALNIQTNVST

ITQDFETYLKQKC--N---SDSVVKNTLSIQS-LEVDECSAPPGQ-IMTFEFINTGTATG
NCAMKSVLDVLTKSSDRVSGNQES----GN-----DFAKYL---YIIG-AVICF
LVLLYYVKKLFFM--STNDKVKVILAKKPDVHWTTFLDTYF---RSSPILV-----

>gi|946699633|ref|YP_009177112.1| myristylated membrane protein
[Turkeypox virus]

-----MGAAASVQTTVTTINKKISEKLEQTASATATANCDINIGNIVFK
KNRGCVNLVKNMCSANSSAQLDAIVSAKVEFNDLNETQKSQYAPSLLT-AALNIQTNVST
VVEDFETYIRQKC--T---SSSVINNNINIQS-LQVDDCSAPPGQ-IMTFEFINTGTSTG
NCAMKSVLDVLTKSSDRVSGNQES----SN-----DFVKYL---YIIG-GVICF
LLLLYYIKKLFFM--SVQDKVKIILAKKPDVHWTTFLDTYF---RTSPVLV-----

>gi|1046611057|ref|YP_009268780.1| imv membrane protein [Pteropox
virus]

-----MGASVSVQTVVNTINDKIRTKLEQQASASATAVCDVTIGSLIIR
KNLGCSVSRNMCQAQADAQLDAILSAVTDVYNLSDSQKAYVPELLT-ASLNIQTTVNT
AVKDFETYLKQTC--N---SDAIIHNKIKVQN-VVMDECASPPGA-I THIDFTNTGTAKG
NCGVKAVMDVLTKASTKESSSQIA----NI-----PTYYLI---IAIV-LVIFA
MIFLYYYAKHMLVT--STTDKIKLILASKPDVHWTTYLDTFY---TYSPSVLSNKQV---

>gi|288804151|gb|ADC53817.1| IMV protein [Pseudocowpox virus]

-----MGAAASIQTTVTTVSERIRNELEQSASASATADCDVTIGSLIIR
KNLGCSVSRNMCSANASAQLDAVMKAVSSTFNLDLSADQKAYVPGLLT-AALNIQTTVNT
AVKDFENYVKQTC--N---ADAIIHNKIKVQN-ILIDECASPAGGPATHLEFVNTGTAVG
NCGVQAVMDVLSKASTTVKSNQEA----NK-----GYQTII---IAIV-VAILA
AIFAWYARHMLFM--STTDKIKLELAKKPVWHWTYLDTFF---TEFPPSV-----

>gi|289183811|ref|YP_003457352.1| IMV protein [Pseudocowpox virus]

-----MGAAASIQTTVTTVSERIRNELEQSASASATADCDVTIGSLIIR
KNLGCSVSRNMCSANASAQLDAVMKAVSSTFNLDLSADQKAYVPGLLT-AALNIQTTVNT
AVKDFENYVKQTC--N---ADAIIHNKIKVQN-ILIDECASPAGGPATHLEFVNTGTAVG
NCGVQAVMDVLSKASTTVKSNQEA----GK-----GYQTII---IAIV-VAILA
AIFAWYARHMLFM--STTDKIKLELAKKPVWHWTYLDTFF---TEFPPSV-----

>gi|913203922|gb|AKU76536.1| Myristylated IMV envelope protein [Orf
virus]

-----MGAAASIQTTVTTVSERIRNELEQSASASATADCDVTIGSLIIR
KNLGCSVSRNMCSANAGAQLDAVMKAVSSTFNLDSSDQKAYVPGLLT-AALNIQTTVNT
AVKDFETYVKQTC--T---ADAVIHNKIKIQN-IVMEECASLPGSPATHLEFVNTGTAAAG
NCGVKAVMDVLAKASTTVHDNQEA----GK-----GYQTII---IAIV-VAILA
AIFAWYARHMLFM--STSDKIKLELAKKPVWHWTYLDTFF---TEFPPSV-----

>gi|41057110|ref|NP_957824.1| ORF047 putative myristylated IMV
envelope protein [Orf virus]

-----MGAAASIQTTVTTVSERIRNELEQSASASATADCDVTIGSLIIR
KNLGCSVSRNMCSANAGAQLDAVMKAVSSTFNLDSSDQKAYVPGLLT-AALNIQTTVNT
AVKDFETYVKQTC--T---ADAVIHNKIKIQN-IVMEECASLPGSPATHLEFVNTGTAAAG
NCGVKAVMDVLAKASTTVRNQEA----GK-----GYQTII---IAIV-VAILA
AIFAWYARHMLFM--STSDKIKLELAKKPVWHWTYLDTFF---TEFPPSV-----

>gi|632123526|gb|AHZ33744.1| myristylated IMV envelope protein [Orf
virus]

-----MGAAASIQTTVTTVSERIRNELEQSASASATADCDVTIGSLIIR
KNLGCSVSRNMCSANAGAQLDAVMKAVSSTFNLDSSDQKAYVPGLLT-AALNIQTTVNT
AVKDFETYMKQTC--T---ADAVIHNKIKIQN-IVMEECASLPGSPATHLEFVNTGTAAAG
NCGVKAVMDVLAKASTTVRNQEA----GK-----GYQTII---IAIV-VAILA
AIFAWYARHMLFM--STSDKIKLELAKKPVWHWTYLDTFF---TEFPPSV-----

>gi|41018534|gb|AAR98142.1| ORF047 putative myristylated IMV envelope
protein [Orf virus]

-----MGAAASIQTTVTTVSERIRNELEQSASASATADCDVTIGSLIIR
KNLGCSVSRNMCSANAGAQLDAVMKAVSSTFNDLSSDQKAYVPGLLT-AALNIQTIVNT
AVKDFETYMKQTC--T---ADAVIHNKIKIQN-IVMEECASLPGSPATHLEFVNTGTAVG
NCGVKAVMDVLAKASTTVRNDQEA----GK-----GYQTII---IAIV-VAILA
AIFAWYARHMLFM--STSDKIKLEAKKPVWHWTYLDTFF---TEFPPSV-----

>gi|74230759|gb|ABA00564.1| IMV protein [Orf virus]
-----MGAAASIQTTVTTVSERIRNELEQSASASATADCDVTIGSLIIR
KNLGCSVSRNMCSANAGAQLDAVMKAVSSTFNDLSSDQKAYVPGLLT-AALNIQTIVNT
AVKDFETYMKQTC--T---ADAVIHNKIKIQN-IVMEECASLPGSPATHLEFVNTGTAVG
NCGVKAVMDVLAKASTTVRNDQEA----GK-----GYQTII---IAIV-VAILA
AIFAWYARHMLFM--STSDKIKLEAKKPVWHWTYLDTFF---TEFPPSV-----

>gi|325073842|gb|ADY76895.1| PP188 [Orf virus]
-----MGAAASIQTTVTTVSERIRNELEQSASASATADCDVTIGSLIIR
KNLGCSVSRNMCSANAGAQLDAVMKAVSSTFNDLSSDQKAYVPGLLT-AALNIQTIVNT
AVKDFETYMKQTC--T---ADAVIHNKIKIQN-IVMEECASLPGSPATHLEFVNTGTAVG
KCGVKAVMEVLAKASTTVRNDQEA----GK-----GYQTII---IAIV-VAILA
AIFAWYARHMLFM--STSDKIKLEAKKPVWHWTYLDTFF---TEFPPSV-----

>gi|738809426|ref|YP_009112786.1| putative myristylated IMV envelope
protein [Parapoxvirus red deer/HL953]
-----MGAAASIQTTVTTVSERIRNELEQTASASAKADCDVTIGSLIIR
KNLGCSVSRNMCSANSSAQLDAVMKAVSSTFNDLSAEQKAYVPGLLT-AALNIQTIVNT
AVKDFETYVKQTC--N---ADSVIHNKIKVQN-IVMDECASPPGGQTHLEFVNTGTASG
NCGVKAVMDVLAKASTTVKAQEQA----NK-----GFNTIV---IAVV-VAILA
AVFAWYARHMLFM--STTDKIKLEAKKPVWHWTYLDTFF---TEFPPSD-----

>gi|41057483|ref|NP_957956.1| ORF047 myristylated IMV envelope protein
[Bovine papular stomatitis virus]
-----MGAAASIQTTVTTINERIRNELQQTASASATADCDVTIGSLIIR
KNLGCSVSVQNMCSADASAQLDAVMKAVSSTFNDLSADQKAYVPGLLT-AALNIQTIVNT
AVKDFENYVRQTC--T---ADSVIHNKIKVQS-IVMDECASPPGGQTHLEFINTGTASG
NCGVKAVMDVLAKASTTVKDQQVA----GK-----GYQTII---IAVV-VAILA
AVFAWYARRMLFT--STTDKIKLEAKKPVWHWTYLDTFF---TEFPPSD-----

>gi|806824899|gb|AKC03473.1| myristylated IMV envelope protein [Bovine
papular stomatitis virus]
-----MGAAASIQTTVTTINERIRNELQQTASASATADCDVTIGSLIIR
KNLGCSVSVQNMCSADASAQLDAVMKAVSSTFNDLSADQKAYVPGLLT-AALNIQTIVNT
AVKDFENYVRQTC--T---ADSVIHNKIKVQS-IVMDECASPPGGQTHLEFINTGTASG
NCGVKAVMDVLAKASTTVKDQQVA----GK-----GYQTII---IAVV-VAILA
AVFAWYARRMLFT--STADKIKLEAKKPVWHWTYLDTFF---TEFPPSV-----

>gi|806824640|gb|AKC03216.1| myristylated IMV envelope protein [Bovine
papular stomatitis virus]
-----MGAAASIQTTVTTINERIRNELQQTASASATADCDVTIGSLIIR
KNLGCSVSVQNMCSADASAQLDAVMKAVSSTFNDLSADQKAYVPGLLT-AALNIQTIVNT
AVKDFENYVRQTC--T---ADSVIHNKIKVQS-IVMDECASPPGGQTHLEFINTGTASG
NCGVKAVMDVLAKASTTVKNEQVA----GK-----GYQAIV---IAVV-VAILA
AIFAWYARRMLFT--STADKIKLEAKKPVWHWTYLDTFF---TEFPPSV-----

>gi|1215835349|ref|YP_009389333.1| myristylated IMV envelope
proteinlike protein [Seal parapoxvirus]
-----MGAAASIQTTVTTISERIRNELEQSASASATADCSVTIGSLIIR
KNTGCSVSRNMCSANADAQLDAVMKAVSTTFNDLSADQKAYVPGLLT-AALNIQTIVNT
AVKDFETYVKQTC--K---SDSVVHNKIKVQN-IVMDECSSPPGGGQTHLEFVNTGTAVG
NCGVKAVMDVVAKASTSVRNEQVA----NK-----GYQTIV---IAAV-VAILA
AVFAWYAKKMLFT--STRDKIRLALANKPVWHWTYLDTFF---TELPSSV-----

>gi|115531746|ref|YP_784272.1| myristylated IMV envelope protein [Nile crocodilepox virus]
-----MGAAASLQTTVNNINQKISNKLVQTASASATANCKVNIGSLRFH
TNKGCAVNIRNLCSADAKASVQSILDAVSESYDGLTSAQKAFAPSLLT-AALNIQTDVNN
VVKDFETYVKQTC--L---ADSVLNSTITVND-IDMGDCQAPQGT-IMNFEFVNAGTASA
NCAMKAVLDVLTKSSDKIASDQVS----NN-----DFRYYYIYGAIAIA-AIVGL
FLTLYYVKKMFVM--STDDKIKLSSLANREVPHWLTLTDYLLGRRDTPHLLYE-----

>gi|9964531|ref|NP_064999.1| putative myristylated membrane protein [Amsacta moorei entomopoxvirus]
-----MGASASINTIVSDITNRVENSLIQTANASAQAICRVTIGSISFR
STQGCTIEVRNLCSAQAVAQVDAVVNATIDFYNNLTFEQKQEAPTWFT-VAYGINTTVTT
IENDFRNLVEQRQC--K---SQAVLDSITVDN-ILVNDCRAPGNE-IVRFTFVNSGTAAAG
QCAISALLDLQVAGSNQVSASQSQ----GL-----NIGNII---LYVA-IAIIV
IAISYVLIKFFGNKPTIKQQISLELAKGAVSSQLIQLSRY---VSKIDDRD-----

>gi|506498821|ref|YP_008004615.1| IMV membrane protein (CopL1R) [Choristoneura rosaceana entomopoxvirus 'L']
-----MGVSASINTIVTDITNRVENSLIQSANASAQSVCRVSIGSISFQ
STQGCTVEIRNLCSAEAISQVDAVVDATIEFYNDLTFEQKQEAPKWFT-SAYGINTTVTT
IENDFRNLIDQRC--K---SEALLESTIEVQN-ILVKDCRAPGNE-IVRFIFTNSGTASG
QCAISALLDLQVSGANEVSASQSQ----GT-----DISAIL---LYVI-IGVVV
VAVAYVIVKFFSNRPSPKQQINLELARHGAVSSKLIQLSQY---ISKVGHSD-----

>gi|506498520|ref|YP_008004316.1| IMV membrane protein (CopL1R) [Choristoneura biennis entomopoxvirus]
-----MGVSASINTIVTDITNRVENSLIQSANASAQAVCRVSIGSISFQ
STQGCTVEIRNLCSAEAISQVDAVVDATIEFYNDLTFEQKQEAPKWFT-SAYGINTTVTT
IENDFRNLIDQRC--K---SEALLESTIEVQN-ILVKDCRAPGNE-IVRFIFTNSGTASG
QCAISALLDLQVSGANEVSASQSQ----GT-----DISAIL---LYVI-IGVVV
VAVAYVIVKFFSNRPSPKQQINLELARHGAVSSKLIQLSQY---ISKVGHSD-----

>gi|506498161|ref|YP_008003958.1| IMV membrane protein (CopL1R) [Adoxophyes honmai entomopoxvirus 'L']
-----MGVSASVNTIVSDITQRVENSLIQTAEASATANCRVSIGSISFT
STRGCCTISVQNLCSAQAVISQVDAVVEATIEFYNDLSFEQKQEAPSWFT-AAYGVNTTVST
IESDFRNLIEQRQC--K---SEALLNSTIEVQN-FIVKDCTAPGNQ-IVNFTFINSGTAAG
QCAISALIDLQVSGSNTVSASQSQ----GL-----DLGAI---IYVV-IAIIV
IAVAYVIVKFFSNKPTPNQQINLELAKMGAVSSKLIQLSKY---ISKME-----

>gi|506497958|ref|YP_008003757.1| IMV membrane protein (CopL1R) [Mythimna separata entomopoxvirus 'L']
-----MGASASINTIVSDITNRVENRLQTAEASATAICRVNIGSISFQ
STQGCVSVSNLCSAQAVAQVDAVVNATIEFYNDLTFEQKQEAPTWFT-LAYGINTTVTT
IENDFKNLIEQRQC--K---SDALLESEITVQN-ILVKDCRAPRDQ-IVNFTFTNTGTASG
QCAISALLDLQVSGSNQVSASQSQ----GL-----DLSTII---IYVI-IAVIV
IAVAYVIVKFASTKLTPQQVQLALAKVNSLSSRLMSYSNL---ISKTRY-----

>gi|582973196|ref|YP_009001570.1| putative myristylated membrane protein [Anomala cuprea entomopoxvirus]
-----MGASASINTIVSTITNRVENSLIQEANASAAHCNVVTIGSILFE
STEGCVIEVRNLCSAQAVAQVDAVVNATIDFYNDLSFEQKQEAPTWFT-AAFGINTTVSN
VTNDFRNLIEQRQC--K---SDAELNNTIEVRN-ITVRSCRAPNEGVTFSFINSGTAAG
QCAISALVLDLQVAGSNTVSAKQSQ----GF-----DLAGII---PYIV-AGIVI
VLVYVIIKLGMLTPKQQIDLELAKHNATSSKLIQLSQF---ISNPNI-----

>gi|9631378|ref|NP_048254.1| ORF MSV183 putative myristylated membrane protein, Molluscum contagiosum virus MC069R (vaccinia L1R) homolog, similar to GB:U60315 [Melanoplus sanguinipes entomopoxvirus]
-----MGASASVNTIVSNINNRVENSLTQEASASATANCNVEIGSITFK

STKGCVVEVSNLCSAQAEASVDAVVNATIDFYNDLSFEQKQEAPAWFT-AAFGVNNTTTN
ITNDFKNIVEQRC--K---ADAVLNSSITVNN-ITVADCVAPESEGVIKFTFTNSGTAAG
QCAISALLDLQVAGSNTVSAKQTT----GT-----DWTVIF---AYVA-LVAGI
AIIAGIFYIYKLRLSPKDKVNIELAKLGATSSKIIQLSQY---LRG-----

>gi|918014487|ref|YP_009162469.1| myristylated IMV envelope protein
L1R [Salmon gill poxvirus]
-----MGVNVDVKEFMQKFESNLNNLSQSGSSQAVANCKVNIGSIIFQ
SNVNCSVNITNNCVASADVSVSAVINALSDAFNSMSSTQKTSIAGFTGGINVGSSTAQT
FIQNMTNTINQSC--S---ASAVANSEFNLGT-LSFGSCKNYFG--TTTINFINTGQARG
NCAMKLVSDLQLQSNNNTGVQDSVFSFGSILTAFCGNLLGQYAKFI---IGFI-AILLF
TPIIYLIVKLFKK----NKPAIGDNNSAVIFESPFIKELAFKSLNNEPLHWSLYSKFL-

>gi|918014482|ref|YP_009162464.1| myristylated IMV envelope protein
F9L [Salmon gill poxvirus]
-----MTLEFHWWKWKWYNEIVTDVLYDLRN--SGYNVNCNITINNLNLT G-
NNCRVSLINVCTANAELFDKVFRSEMAKRKNYLPLYLQKQFDKIIS-----
PDNINKLC--SGKLTTELVDNSVLLDS-VDI-HCDSNRNSYTEPLKIVNTGSANT
DCKYLQYATLFNKTGQPSDFFSVD----TS-----RKNFII---YTLV-LGVLG
FGIFAGILMYLNS----KNLKIDNYRTNVVYDPVSSEKIFKKFKVLHIAKEAKYFDKEH
KIAFGLIDNGLITTGKHV

Supplemental file 2

A: F9_L1_conserved

((((((((((((((((((((((((((((Query_119423 :0.0000,
gi_66275845_ref_YP_232930_1_SS_bondFormationPathwayProtein_Vaccinia_virus
:0.0000):0.0000[42],
gi_325558002_gb_ADZ29383_1_SS_bondFormationPathwayProtein_Cowpox_virus
:0.0000):0.0000[23],
gi_325514063_gb_ADZ24057_1_SS_bondFormationPathwayProtein_Cowpox_virus
:0.0000):0.0000[26], gi_111184232_gb_ABH08152_1_HSPV049_Horsepox_virus
:0.0000):0.0000[21], gi_554571866_gb_AGY97569_1_CPXV056_protein_Cowpox_virus
:0.0000):0.0000[24],
gi_38348914_gb_AAR17890_1_SS_bondFormationPathwayProtein_Vaccinia_virus
:0.0000):0.0000[11], gi_17974954_ref_NP_536468_1_C15L_Monkeypox_virus_Zaire96I16
:0.0000):0.0000[13], gi_44971400_gb_AAS49750_1_RPXV037_Rabbitpox_virus
:0.0000):0.0000[12], gi_20178423_ref_NP_619844_1_CPXV056_protein_Cowpox_virus
:0.0000):0.0000[12], gi_90660286_gb_ABD97400_1_unknown_Cowpox_virus
:0.0000):0.0000[12], gi_18640278_ref_NP_570434_1_CMLV044_Camelpox_virus
:0.0000):0.0000[7],
gi_113195226_ref_YP_717356_1_hypothetical_protein_TATV_DAH68_049_Taterapox_virus
:0.0000):0.0009[9], gi_137849_sp_P24361_1_F9_VACCW_RecName_Full=Protein_F9
:0.0099):0.0007[11],(gi_22164637_ref_NP_671550_1_EVM032_Ectromelia_virus
:0.0083,(((
gi_9627554_ref_NP_042077_1_SS_bondFormationPathwayProtein_Variola_virus :-
0.0052,
gi_544838_gb_AAB29629_1_C13L_product_variola_virus_VAR_India1967_Peptide_212_aa
:0.0162):0.0026[47],
gi_94487114_gb_ABF26214_1_hypothetical_protein_VARV_KUW67_1629_036_Variola_virus
:-0.0026):0.0013[74],
gi_94489329_gb_ABF28418_1_hypothetical_protein_VARV_UNK44_harv_036_Variola_virus
:-0.0013):0.0135[84]):0.0048[42]):0.0054[33],(((
gi_325558218_gb_ADZ29598_1_SS_bondFormationPathwayProtein_Cowpox_virus :-
0.0028,
gi_831934475_ref_YP_009143355_1_SS_bondFormationPathwayProtein_Raccoonpox_virus
:0.0353):0.0014[19], gi_1210076734_emb_SNBA49914_1_CPXV056_protein_Cowpox_virus :-
0.0014):0.0037[15],
gi_1169132833_gb_ARB50282_1_SS_bondFormationPathwayProtein_Cowpox_virus
:0.0071):0.0042[17]):0.0208[63],(
gi_1070062745_ref_YP_009282739_1_SS_bondFormationPathwayProtein_Substrate_Skunk
pox_virus :0.0223,
gi_1070099067_ref_YP_009281793_1_SS_bondFormationPathwayProtein_Substrate_Volep
ox_virus :0.0214):0.0205[75]):0.0289[74],(
gi_1229243048_gb_AST09440_1_SS_bondFormationPathwayProtein_Substrate_NY_014_pox
virus :-0.0029,
gi_1229242845_gb_AST09238_1_Substrate_for_poxvirus_SS_bondFormationPathway_Murma
nsk_poxvirus :0.0137):0.0050[66],
gi_345107212_ref_YP_004821377_1_Substrate_for_poxvirus_SS_bondFormationPathway_Y
okapox_virus :0.0852):0.0320[65]):0.0752[81],
gi_1215207784_gbASK51226_1_SS_bondFormationPathwayProtein_Eptesipox_virus
:0.3043):0.0599[54],(gi_38229187_ref_NP_938280_1_24L_Yaba_monkey_tumor_virus
:0.0420,(gi_146746361_gb_ABQ43497_1_hypothetical_protein_Tanapox_virus :0.0000,
gi_12085007_ref_NP_073409_1_24L_protein_Yabalike_disease_virus
:0.0000):0.0485[98]):0.1567[99]):0.0359[44],
gi_571797936_ref_YP_008658435_1_envelope_protein_poxlipid_membrane_protein_Squirre
lpox_virus :0.3216):0.0756[31],(((
gi_62637409_ref_YP_227407_1_hypothetical_protein_DpV83gp031_Deerpox_virus_W84883
:0.0141,
gi_115503098_gb_ABI99016_1_hypothetical_protein_DpV84gp031_Deerpox_virus_W117084

:0.0523):0.1875[99],(((
gi_15150463_ref_NP_150458_1_LSDV024_hypothetical_protein_Lumpy_skin_disease_virus_NI2490 :-0.0042,()
gi_557370484_gb_AGZ95339_1_hypothetical_protein_Goatpox_virus_FZ :-0.0004,
gi_13876676_gb_AAK43564_1_unknown_Lumpy_skin_disease_virus :0.0221):0.0020[29],
gi_148912901_ref_YP_001293215_1_hypothetical_protein_GTPV_gp021_Goatpox_virus_Pell
or :0.0089):0.0095[43]):0.0021[43],
gi_22595717_gb_AAN02749_1_hypothetical_protein_Lumpy_skin_disease_virus :-
0.0021):0.0011[74],
gi_21492478_ref_NP_659597_1_hypothetical_protein_SPPV_21_Sheepox_virus :-
0.0011):0.1587[100],
gi_18640107_ref_NP_570181_1_SPV021_hypothetical_protein_Swinepox_virus
:0.1251):0.0571[69]):0.0177[16],()
gi_377830027_ref_YP_005296228_1_unnamed_protein_product_Cotia_virus_SPAn232
:0.0680, gi_1119035593_ref_YP_009329644_1_protein_F9_BeAn_58058_virus
:0.0655):0.1845[99],(gi_9633655_ref_NP_051733_1_M019L_Myxoma_virus :-0.0001,()
gi_539191030_gb_AGU99702_1_M019L_Myxoma_virus :0.0000,
gi_982818174_gb_AMB18352_1_M019L_Myxoma_virus :0.0000):0.0234[91],
gi_9633830_ref_NP_051908_1_gp019L_Rabbit_fibroma_virus
:0.0314):0.0163[69]):0.1994[99]):0.0300[28]):0.0360[38]):0.0736[41],()
gi_1158620706_gb_AQY16587_1_MC016_Molluscum_contagiosum_virus_subtype_2 :0.0266,
gi_9628948_ref_NP_043967_1_MC016L_Molluscum_contagiosum_virus_subtype_1
:0.0288):0.2402[100],
gi_115531700_ref_YP_784226_1_hypothetical_protein_CRV036_Nile_crocodilepox_virus
:0.3511):0.1166[51]):0.0531[16],
gi_1046611009_ref_YP_009268732_1_ss_bondFormation_pathway_protein_Pteropox_virus
:0.3249):0.0540[25],((((
gi_659488485_ref_YP_009046346_1_hypothetical_protein_fep_114_Pigeonpox_virus :-
0.0020,
gi_659488247_ref_YP_009046109_1_hypothetical_protein_pepv_116_Penguinpox_virus
:0.0347):0.0075[60],
gi_9634782_ref_NP_039075_1_hypothetical_protein_FPV112_Fowlpox_virus
:0.0033):0.0939[96],(gi_1173596604_gb_ARE67656_1_SWPV1128_Shearwaterpox_virus
:0.0653,
gi_40556077_ref_NP_955162_1_CNPV139_conserved_hypothetical_protein_Canarypox_virus
:0.0518):0.0638[74]):0.0152[47],
gi_946699624_ref_YP_009177103_1_hypothetical_protein_Turkeypox_virus
:0.1378):0.3210[100]):0.0929[35],()
gi_1215835429_ref_YP_009389413_1_vaccinia_virus_F9Llike_protein_Seal_parapoxvirus
:0.0629,((((
gi_28261211_gb_AA031709_1_vaccinia_virus_F9Llike_protein_Bovine_papular_stomatitis
_virus :0.0031,
gi_806824981_gb_AKC03555_1_putative_membrane_protein_Bovine_papular_stomatitis_vir
us :0.0184):0.0045[84],
gi_41057566_ref_NP_958039_1_ORF131_putative_membrane_protein_Bovine_papular_stomat
itis_virus :-0.0045):0.0023[83],
gi_806824721_gb_AKC03297_1_putative_membrane_protein_Bovine_papular_stomatitis_vir
us :-0.0023):0.1008[100],
gi_738809510_ref_YP_009112870_1_putative_membrane_protein_Parapoxvirus_red_deer/HL
953 :0.1170):0.0532[66]):0.0298[41],((((
gi_28261202_gb_AA031701_1_vaccinia_virus_F9Llike_protein_Orf_virus_strain_D1701
:0.0172,((gi_576864655_gb_AHH34314_1_putative_membrane_protein_Orf_virus :-
0.0024, gi_41018618_gb_AAR98226_1_ORF131_putative_membrane_protein_Orf_virus
:0.0131):0.0012[42],
gi_915529_gb AAA86391_1_similar_to_vaccinia_virus_F9L_SwissProt_Accession_Number_P
21018_Orf_virus :-0.0012):0.0044[46]):0.0095[44],
gi_913204007_gb_AKU76621_1_Membrane_protein_Orf_virus :0.0240):0.0115[48],
gi_632123611_gb_AHZ33829_1_membrane_protein_Orf_virus :-0.0008):0.0499[73],()
gi_913204395_gb_AKU77006_1_Membrane_protein_Orf_virus :0.0044,(
gi_41057194_ref_NP_957908_1_ORF131_putative_membrane_protein_Orf_virus :0.0014,(

gi_913204140_gb_AKU76753_1_Membrane_protein_Orf_virus :0.0146,
gi_913204266_gb_AKU76878_1_Membrane_protein_Orf_virus
:0.0178):0.0092[40]):0.0037[24]):0.0115[55],(
gi_289183766_ref_YP_003457307_1_membrane_protein_Pseudocowpox_virus :0.0000,
gi_288804230_gb_ADC53896_1_membrane_protein_Pseudocowpox_virus
:0.0000):0.0369[96]):0.0185[60]):0.0123[30]):0.5720[100]):0.2091[85],(((
gi_582973317_ref_YP_009001691_1_SS_bondFormation_pathway_protein_Anomala_cuprea_e
ntomopoxvirus :0.2638,((
gi_506498247_ref_YP_008004044_1_SS_bondFormation_pathway_protein_substrate_CopF9L
_Adoxophyes_honmai_entomopoxvirus_L :0.0431,()
gi_506498553_ref_YP_008004349_1_SS_bondFormation_pathway_protein_substrate_CopF9L
_Choristoneura.biennis_entomopoxvirus :-0.0022,
gi_506498856_ref_YP_008004650_1_SS_bondFormation_pathway_protein_substrate_CopF9L
_Choristoneura_rosacea_entomopoxvirus_L :0.0355):0.0415[97],
gi_9964557_ref_NP_065025_1_hypothetical_protein_AMV243_Amsacta_moorei_entomopoxvir
us :0.0149):0.0472[75]):0.0136[52],
gi_506497986_ref_YP_008003785_1_SS_bondFormation_pathway_protein_substrate_CopF9L
_Mythimna_separata_entomopoxvirus_L :0.0519):0.1158[96]):0.0977[83],
gi_9631330_ref_NP_048165_1_ORF_MSV094_putative_membrane_protein_vaccinia_F9L_sim
ilar_to_SW_P24361_Melanoplus_sanguinipes_entomopoxvirus :0.2615):0.1931[91],
gi_51317197_gb_AAT99854_1_putative_membrane_protein_Diachasmimorpha_longicaudata_e
ntomopoxvirus :0.8421):0.0638[46]):0.1112[56],
gi_918014482_ref_YP_009162464_1_myristylated_IMV_envelope_protein_F9L_Salmon_gill_poxvirus :1.1532):0.1634[76],
gi_918014487_ref_YP_009162469_1_myristylated_IMV_envelope_protein_L1R_Salmon_gill_poxvirus :0.4699):0.1841[90],
gi_115531746_ref_YP_784272_1_myristylated_IMV_envelope_protein_Nile_crocodilepox_virus :0.2622):0.0580[63],((((
gi_9964531_ref_NP_064999_1_putative_myristylated_membrane_protein_Amsacta_moorei_entomopoxvirus :0.0761,(
gi_506498821_ref_YP_008004615_1_IMV_membrane_protein_CopL1R_Choristoneura_rosacea_entomopoxvirus_L :0.0129,
gi_506498520_ref_YP_008004316_1_IMV_membrane_protein_CopL1R_Choristoneura.biennis_entomopoxvirus :-0.0028):0.1461[100]):0.0207[16],
gi_506497958_ref_YP_008003757_1_IMV_membrane_protein_CopL1R_Mythimna_separata_entomopoxvirus_L :0.1151):0.0199[18],
gi_9631378_ref_NP_048254_1_ORF_MSV183_putative_myristylated_membrane_protein_Molluscum_contagiosum_virus_MC069R_vaccinia_L1R_homolog_similar_to_GB_U60315_Melanoplus_ :0.1314):0.0197[11],
gi_582973196_ref_YP_009001570_1_putative_myristylated_membrane_protein_Anomala_cuprea_entomopoxvirus :0.0740):0.0132[12],
gi_506498161_ref_YP_008003958_1_IMV_membrane_protein_CopL1R_Adoxophyes_honmai_entomopoxvirus_L :0.1061):0.3335[99]):0.1061[87],(
gi_1046611057_ref_YP_009268780_1_imv_membrane_protein_Pteropox_virus :0.1542,((((
gi_288804151_gb_ADC53817_1_IMV_protein_Pseudocowpox_virus :0.0000,
gi_289183811_ref_YP_003457352_1_IMV_protein_Pseudocowpox_virus :0.0000):0.0304[96],
gi_738809426_ref_YP_009112786_1_putative_myristylated_IMV_envelope_protein_Parapox_virus_red_deer/HL953 :0.0219):0.0158[58],(((
gi_913203922_gb_AKU76536_1_Myristylated_IMV_envelope_protein_Orf_virus :-0.0021,
gi_325073842_gb_ADY76895_1_PP188_Orf_virus :0.0123):0.0011[46],
gi_41057110_ref_NP_957824_1_ORF047_putative_myristylated_IMV_envelope_protein_Orf_virus :-0.0011):0.0005[46],
gi_632123526_gb_AHZ33744_1_myristylated_IMV_envelope_protein_Orf_virus :-0.0005):0.0066[70],(
gi_41018534_gb_AAR98142_1_ORF047_putative_myristylated_IMV_envelope_protein_Orf_virus :0.0056, gi_74230759_gb_ABA00564_1_IMV_protein_Orf_virus :0.0148):0.0037[25]):0.0023[38]):0.0256[57],((
gi_41057483_ref_NP_957956_1_ORF047_myristylated_IMV_envelope_protein_Bovine_papular_stomatitis_virus :0.0000,

gi_806824899_gb_AKC03473_1_myristylated_IMV_envelope_protein_Bovine_papular_stomatitis_virus :0.0000):0.0000[97],
gi_806824640_gb_AKC03216_1_myristylated_IMV_envelope_protein_Bovine_papular_stomatitis_virus :0.0000):0.0368[97]):0.0153[51],
gi_1215835349_ref_YP_009389333_1_myristylated_IMV_envelope_proteinlike_protein_Sea1_parapoxvirus :0.0515):0.1480[99]):0.0399[67]):0.0687[78],((
gi_1158620761_gb_AQY16642_1_MC069_Molluscum_contagiosum_virus_subtype_2 :0.0111,
gi_9629001_ref_NP_044020_1_MC069R_Molluscum_contagiosum_virus_subtype_1
:0.0092):0.0661[98],((((
gi_659488260_ref_YP_009046122_1_myristylated_protein_Penguinpox_virus :-0.0033,(
gi_9634798_ref_NP_039091_1_Myristylated_membrane_protein_Fowlpox_virus :-0.0038,
gi_221404_dbj_BAA00225_1_unnamed_protein_product_Fowlpox_virus
:0.0139):0.0237[87]):0.0100[85],
gi_659488498_ref_YP_009046359_1_myristylated_protein_Pigeonpox_virus
:0.0002):0.0456[96],
gi_946699633_ref_YP_009177112_1_myristylated_membrane_protein_Turkeypox_virus
:0.0693):0.0196[57],((gi_1173596344_gb_ARE67397_1_SWPV2ORF161_Shearwaterpox_virus
:-0.0009,
gi_40556111_ref_NP_955196_1_CNPV173_putative_myristylated_IMV_envelope_protein_Canarypox_virus :0.0110):0.0244[85],
gi_1174036708_gb_ARF02733_1_SWPV1149_Shearwaterpox_virus
:0.0589):0.0251[65]):0.1153[99]):0.0303[73]):0.0660[71],
gi_571797980_ref_YP_008658479_1_myristylprotein/_IMV_protein_Squirrelpox_virus
:0.1769):0.0779[93],(((
gi_377829969_ref_YP_005296264_1_unnamed_protein_product_Cotia_virus_SPAn232
:0.0193, gi_1119035641_ref_YP_009329692_1_protein_L1_BeAn_58058_virus
:0.0426):0.0617[96],((gi_539191066_gb_AGU99738_1_m55R_Myxoma_virus :0.0000,
gi_9633691_ref_NP_051769_1_m55R_Myxoma_virus :0.0000):0.0002[83],
gi_9633864_ref_NP_051944_1_gp055R_Rabbit_fibroma_virus
:0.0099):0.1165[100]):0.0116[35],(((
gi_115503135_gb_ABI99053_1_myristylated_IMV_envelope_protein_Deerpox_virus_W117084
:-0.0003,
gi_62637446_ref_YP_227444_1_Myristylated_IMV_envelope_protein_Deerpox_virus_W84883
:0.0106):0.0117[91],((
gi_148912937_ref_YP_001293251_1_hypothetical_protein_GTPV_gp056_Goatpox_virus_Pell
or :0.0000, gi_154268989_gb_ABS72327_1_L1R_Goatpox_virus :0.0000):0.0105[94],
gi_15150499_ref_NP_150494_1_LSDV060_putative_myristylated_IMV_envelope_protein_Lum
py_skin_disease_virus_NI2490 :-0.0001):0.0091[79],
gi_21492513_ref_NP_659632_1_Myristylated_IMV_envelope_protein_Sheppox_virus
:0.0117):0.0524[96]):0.0207[58],(
gi_18640143_ref_NP_570217_1_SPV057_putative_myristylated_IMV_envelope_protein_Swin
epox_virus :0.0709,
gi_1237089682_ref_YP_009408015_1_Myristylated_IMV_envelope_protein_Eptesipox_virus
:0.1075):0.0106[21]):0.0081[22],(
gi_38229222_ref_NP_938315_1_60R_Yaba_monkey_tumor_virus :0.0387,
gi_12085043_ref_NP_073445_1_60R_protein_Yabalike_disease_virus
:0.0455):0.0413[82]):0.0421[62]):0.0487[81]):0.0622[92],(
gi_1236513682_ref_YP_009408468_1_IMV_membrane_protein_NY_014_poxvirus :0.0000,
gi_1236513479_ref_YP_009408266_1_IMV_membrane_protein_Murmansk_poxvirus
:0.0000):0.0452[99]):0.0106[50],
gi_345107256_ref_YP_004821421_1_IMV_membrane_protein_Yokapox_virus
:0.0491):0.0549[98],(
gi_1070062787_ref_YP_009282781_1_imv_membrane_protein_Skunkpox_virus :0.0000,
gi_1070099109_ref_YP_009281835_1_imv_membrane_protein_Volepox_virus
:0.0000):0.0205[95],
gi_831934516_ref_YP_009143396_1_IMV_membrane_protein_Raccoonpox_virus
:0.0000):0.0071[63]):0.0043[51],(
gi_90660326_gb_ABD97440_1_IMV_membrane_protein_Cowpox_virus :0.0000,
gi_325558042_gb_ADZ29423_1_IMV_membrane_protein_Cowpox_virus :0.0000):-0.0000[52],
gi_20178464_ref_NP_619885_1_CPXV099_protein_Cowpox_virus

:0.0000):0.0004[50]):0.0049[56],
gi_1210074512_emb_SNBSNB53955_1_CPXV099_protein_Cowpox_virus :0.0054):0.0044[56],(((
gi_29029580_gb_AAN78221_1_M1R_Monkeypox_virus :0.0000,
gi_17974993_ref_NP_536507_1_M1R_Monkeypox_virus_Zaire96I16 :0.0000):0.0000[52],
gi_300872703_gb_ADK39105_1_myristylprotein_Monkeypox_virus :0.0000):-0.0000[47],
gi_661921024_gb_AIE40517_1_myristylprotein_Monkeypox_virus
:0.0000):0.0098[62]):0.0005[29],
gi_562817396_gb_AHB35726_1_IMV_membrane_protein_Vaccinia_virus
:0.0103):0.0001[14], gi_22164677_ref_NP_671590_1_EVM072_Ectromelia_virus
:0.0104):0.0000[8], gi_6969736_gb_AAF33948_1_TL1R_Vaccinia_virus_Tian_Tan
:0.0000):0.0000[7], Query_247142 :0.0000):0.0000[4],
gi_66275885_ref_YP_232970_1_IMV_membrane_protein_Vaccinia_virus
:0.0000):0.0000[3],
gi_113195268_ref_YP_717398_1_IMV_membrane_protein_Taterapox_virus
:0.0000):0.0000[3], gi_1210075651_emb_SNBSNB56540_1_CPXV099_protein_Cowpox_virus
:0.0000):0.0000[3], gi_1210075080_emb_SNBSNB57671_1_CPXV099_protein_Cowpox_virus
:0.0000):0.0000[3], gi_732554838_gb_AIZ72837_1_IMV_membrane_protein_Vaccinia_virus
:0.0000):0.0000[3],
gi_9627594_ref_NP_042117_1_hypothetical_protein_VARVgp073_Variola_virus
:0.0000):0.0000[5],
gi_1143682_emb_CAA53878_1_unnamed_protein_product_Variola_virus :0.0000,
gi_18640320_ref_NP_570476_1_CMLV086_Camelpox_virus :0.0104);

B: F9_L1_gapfree

((((((((((((((((((((((((((((Query_119423 :0.0000,
gi_66275845_ref_YP_232930_1_SS_bondFormationPathwayProtein_Vaccinia_virus
:0.0000):0.0000[42],
gi_325558002_gb_ADZ29383_1_SS_bondFormationPathwayProtein_Cowpox_virus
:0.0000):0.0000[23],
gi_325514063_gb_ADZ24057_1_SS_bondFormationPathwayProtein_Cowpox_virus
:0.0000):0.0000[26], gi_111184232_gb_ABH08152_1_HSPV049_Horsepox_virus
:0.0000):0.0000[21], gi_554571866_gb_AGY97569_1_CPXV056_protein_Cowpox_virus
:0.0000):0.0000[24],
gi_38348914_gb_AAR17890_1_SS_bondFormationPathwayProtein_Vaccinia_virus
:0.0000):0.0000[11], gi_17974954_ref_NP_536468_1_C15LMonkeypox_virus_Zaire96I16
:0.0000):0.0000[13], gi_44971400_gb_AAS49750_1_RPXV037_Rabbitpox_virus
:0.0000):0.0000[12], gi_20178423_ref_NP_619844_1_CPXV056_protein_Cowpox_virus
:0.0000):0.0000[12], gi_90660286_gb_ABD97400_1_unknown_Cowpox_virus
:0.0000):0.0000[12], gi_18640278_ref_NP_570434_1_CMLV044_Camelpox_virus
:0.0000):0.0000[7],
gi_113195226_ref_YP_717356_1_hypothetical_protein_TATV_DAH68_049_Taterapox_virus
:0.0000):0.0009[9], gi_137849_sp_P24361_1_F9_VACCW_RecName_Full=Protein_F9
:0.0099):0.0007[11],(gi_22164637_ref_NP_671550_1_EVM032_Ectromelia_virus
:0.0083,((
gi_9627554_ref_NP_042077_1_SS_bondFormationPathwayProtein_Variola_virus :-
0.0052,
gi_544838_gb_AAB29629_1_C13L_product_variola_virus_VAR_India1967_Peptide_212_aa
:0.0162):0.0026[47],
gi_94487114_gb_ABF26214_1_hypothetical_protein_VARV_KUW67_1629_036_Variola_virus
:-0.0026):0.0013[74],
gi_94489329_gb_ABF28418_1_hypothetical_protein_VARV_UNK44_harv_036_Variola_virus
:-0.0013):0.0135[84]):0.0048[42]):0.0054[33],((
gi_325558218_gb_ADZ29598_1_SS_bondFormationPathwayProtein_Cowpox_virus :-
0.0028,
gi_831934475_ref_YP_009143355_1_SS_bondFormationPathwayProtein_Raccoonpox_virus
:0.0353):0.0014[19], gi_1210076734_emb_SNBA9914_1_CPXV056_protein_Cowpox_virus :-
0.0014):0.0037[15],
gi_1169132833_gb_ARB50282_1_SS_bondFormationPathwayProtein_Cowpox_virus
:0.0071):0.0042[17]):0.0208[63],(
gi_1070062745_ref_YP_009282739_1_SS_bondFormationPathwayProteinSubstrate_Skunk
pox_virus :0.0223,
gi_1070099067_ref_YP_009281793_1_SS_bondFormationPathwayProteinSubstrate_Volep
ox_virus :0.0214):0.0205[75]):0.0289[74],((
gi_1229243048_gb_AST09440_1_SS_bondFormationPathwayProteinSubstrate_NY_014_pox
virus :-0.0029,
gi_1229242845_gb_AST09238_1_substrateForPoxvirus_SS_bondFormationPathway_Murma
nsk_poxvirus :0.0137):0.0050[66],
gi_345107212_ref_YP_004821377_1_substrateForPoxvirus_SS_bondFormationPathway_Y
okapox_virus :0.0852):0.0320[65]):0.0752[81],
gi_1215207784_gbASK51226_1_SS_bondFormationPathwayProtein_Eptesipox_virus
:0.3043):0.0599[54],(gi_38229187_ref_NP_938280_1_24L_Yaba_monkey_tumor_virus
:0.0420,(gi_146746361_gb_ABQ43497_1_hypothetical_protein_Tanapox_virus :0.0000,
gi_12085007_ref_NP_073409_1_24L_protein_Yabalike_disease_virus
:0.0000):0.0485[98]):0.1567[99]):0.0359[44],
gi_571797936_ref_YP_008658435_1_envelope_protein_poxlipid_membrane_protein_Squirre
lpox_virus :0.3216):0.0756[31],((
gi_62637409_ref_YP_227407_1_hypothetical_protein_DpV83gp031_Deerpox_virus_W84883
:0.0141,
gi_115503098_gb_ABI99016_1_hypothetical_protein_DpV84gp031_Deerpox_virus_W117084
:0.0523):0.1875[99],(((
gi_15150463_ref_NP_150458_1_LSDV024_hypothetical_protein_Lumpy_skin_disease_virus_
NI2490 :-0.0042,((

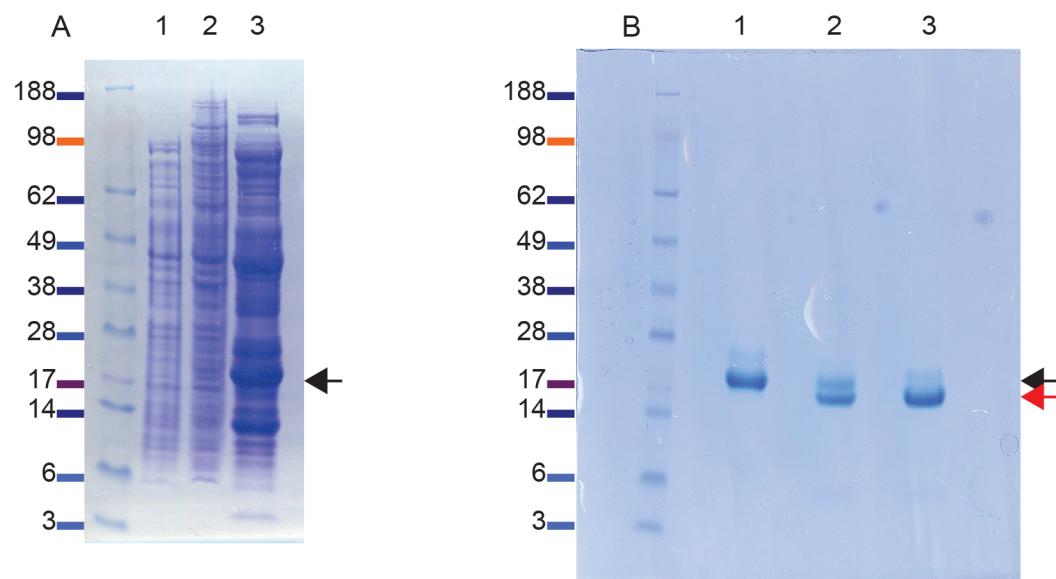
gi_557370484_gb_AGZ95339_1_hypothetical_protein_Goatpox_virus_FZ :-0.0004,
gi_13876676_gb_AAK43564_1_unknown_Lumpy_skin_disease_virus :0.0221):0.0020[29],
gi_148912901_ref_YP_001293215_1_hypothetical_protein_GTPV_gp021_Goatpox_virus_Pell
or :0.0089):0.0095[43]):0.0021[43],
gi_22595717_gb_AAN02749_1_hypothetical_protein_Lumpy_skin_disease_virus :-
0.0021):0.0011[74],
gi_21492478_ref_NP_659597_1_hypothetical_protein_SPPV_21_Sheppox_virus :-
0.0011):0.1587[100],
gi_18640107_ref_NP_570181_1_SPV021_hypothetical_protein_Swinepox_virus
:0.1251):0.0571[69]):0.0177[16],((
gi_377830027_ref_YP_005296228_1_unnamed_protein_product_Cotia_virus_SPAn232
:0.0680, gi_1119035593_ref_YP_009329644_1_protein_F9_BeAn_58058_virus
:0.0655):0.1845[99],(gi_9633655_ref_NP_051733_1_M019L_Myxoma_virus :-0.0001,((
gi_539191030_gb_AGU99702_1_M019L_Myxoma_virus :0.0000,
gi_982818174_gb_AMB18352_1_M019L_Myxoma_virus :0.0000):0.0234[91],
gi_9633830_ref_NP_051908_1_gp019L_Rabbit_fibroma_virus
:0.0314):0.0163[69]):0.1994[99]):0.0300[28]):0.0360[38]):0.0736[41],((
gi_1158620706_gb_AQY16587_1_MC016_Molluscum_contagiosum_virus_subtype_2 :0.0266,
gi_9628948_ref_NP_043967_1_MC016L_Molluscum_contagiosum_virus_subtype_1
:0.0288):0.2402[100],
gi_115531700_ref_YP_784226_1_hypothetical_protein_CRV036_Nile_crocodilepox_virus
:0.3511):0.1166[51]):0.0531[16],
gi_1046611009_ref_YP_009268732_1_ss_bondFormation_pathway_protein_Pteropox_virus
:0.3249):0.0540[25],(((
gi_659488485_ref_YP_009046346_1_hypothetical_protein_fep_114_Pigeonpox_virus :-
0.0020,
gi_659488247_ref_YP_009046109_1_hypothetical_protein_pepv_116_Penguinpox_virus
:0.0347):0.0075[60],
gi_9634782_ref_NP_039075_1_hypothetical_protein_FPV112_Fowlpox_virus
:0.0033):0.0939[96],(gi_1173596604_gb_ARE67656_1_SWPV1128_Shearwaterpox_virus
:0.0653,
gi_40556077_ref_NP_955162_1_CNPV139_conserved_hypothetical_protein_Canarypox_virus
:0.0518):0.0638[74]):0.0152[47],
gi_946699624_ref_YP_009177103_1_hypothetical_protein_Turkeypox_virus
:0.1378):0.3210[100]):0.0929[35],((
gi_1215835429_ref_YP_009389413_1_vaccinia_virus_F9Llike_protein_Seal_parapoxvirus
:0.0629,(((
gi_28261211_gb_AA031709_1_vaccinia_virus_F9Llike_protein_Bovine_papular_stomatitis
_virus :0.0031,
gi_806824981_gb_AKC03555_1_putative_membrane_protein_Bovine_papular_stomatitis_vir
us :0.0184):0.0045[84],
gi_41057566_ref_NP_958039_1_ORF131_putative_membrane_protein_Bovine_papular_stomat
itis_virus :-0.0045):0.0023[83],
gi_806824721_gb_AKC03297_1_putative_membrane_protein_Bovine_papular_stomatitis_vir
us :-0.0023):0.1008[100],
gi_738809510_ref_YP_009112870_1_putative_membrane_protein_Parapoxvirus_red_deer/HL
953 :0.1170):0.0532[66]):0.0298[41],((((
gi_28261202_gb_AA031701_1_vaccinia_virus_F9Llike_protein_Orf_virus_strain_D1701
:0.0172,((gi_576864655_gb_AHH34314_1_putative_membrane_protein_Orf_virus :-
0.0024, gi_41018618_gb_AAR98226_1_ORF131_putative_membrane_protein_Orf_virus
:0.0131):0.0012[42],
gi_915529_gb_AAA86391_1_similar_to_vaccinia_virus_F9L_SwissProt_Accession_Number_P
21018_Orf_virus :-0.0012):0.0044[46]):0.0095[44],
gi_913204007_gb_AKU76621_1_Membrane_protein_Orf_virus :0.0240):0.0115[48],
gi_632123611_gb_AHZ33829_1_membrane_protein_Orf_virus :-0.0008):0.0499[73],((
gi_913204395_gb_AKU77006_1_Membrane_protein_Orf_virus :0.0044,(
gi_41057194_ref_NP_957908_1_ORF131_putative_membrane_protein_Orf_virus :0.0014,(
gi_913204140_gb_AKU76753_1_Membrane_protein_Orf_virus :0.0146,
gi_913204266_gb_AKU76878_1_Membrane_protein_Orf_virus
:0.0178):0.0092[40]):0.0037[24]):0.0115[55],(

gi_289183766_ref_YP_003457307_1_membrane_protein_Pseudocowpox_virus :0.0000,
gi_288804230_gb_ADC53896_1_membrane_protein_Pseudocowpox_virus
:0.0000):0.0369[96]):0.0185[60]):0.0123[30]):0.5720[100]):0.2091[85],((
gi_582973317_ref_YP_009001691_1_SS_bondFormation_pathway_protein_Anomala_cuprea_e
ntomopoxvirus :0.2638,((
gi_506498247_ref_YP_008004044_1_SS_bondFormation_pathway_protein_substrate_CopF9L
_Adoxophyes_honmai_entomopoxvirus_L :0.0431,()
gi_506498553_ref_YP_008004349_1_SS_bondFormation_pathway_protein_substrate_CopF9L
_Choristoneura_biennis_entomopoxvirus :-0.0022,
gi_506498856_ref_YP_008004650_1_SS_bondFormation_pathway_protein_substrate_CopF9L
_Choristoneura_rosacea_entomopoxvirus_L :0.0355):0.0415[97],
gi_9964557_ref_NP_065025_1_hypothetical_protein_AMV243_Amsacta_moorei_entomopoxvir
us :0.0149):0.0472[75]):0.0136[52],
gi_506497986_ref_YP_008003785_1_SS_bondFormation_pathway_protein_substrate_CopF9L
_Mythimna_separata_entomopoxvirus_L :0.0519):0.1158[96]):0.0977[83],
gi_9631330_ref_NP_048165_1_ORF_MSV094_putative_membrane_protein_vaccinia_F9L_sim
ilar_to_SW_P24361_Melanoplus_sanguinipes_entomopoxvirus :0.2615):0.1931[91],
gi_51317197_gb_AAT99854_1_putative_membrane_protein_Diachasmimorpha_longicaudata_e
ntomopoxvirus :0.8421):0.0638[46]):0.1112[56],
gi_918014482_ref_YP_009162464_1_myristylated_IMV_envelope_protein_F9L_Salmon_gill_poxvirus :1.1532):0.1634[76],
gi_918014487_ref_YP_009162469_1_myristylated_IMV_envelope_protein_L1R_Salmon_gill_poxvirus :0.4699):0.1841[90],
gi_115531746_ref_YP_784272_1_myristylated_IMV_envelope_protein_Nile_crocodilepox_virus :0.2622):0.0580[63],((((
gi_9964531_ref_NP_064999_1_putative_myristylated_membrane_protein_Amsacta_moorei_entomopoxvirus :0.0761,(
gi_506498821_ref_YP_008004615_1_IMV_membrane_protein_CopL1R_Choristoneura_rosacea_entomopoxvirus_L :0.0129,
gi_506498520_ref_YP_008004316_1_IMV_membrane_protein_CopL1R_Choristoneura_biennis_entomopoxvirus :-0.0028):0.1461[100]):0.0207[16],
gi_506497958_ref_YP_008003757_1_IMV_membrane_protein_CopL1R_Mythimna_separata_entomopoxvirus_L :0.1151):0.0199[18],
gi_9631378_ref_NP_048254_1_ORF_MSV183_putative_myristylated_membrane_protein_Molluscum_contagiosum_virus_MC069R_vaccinia_L1R_homolog_similar_to_GB_U60315_Melanoplus_ :0.1314):0.0197[11],
gi_582973196_ref_YP_009001570_1_putative_myristylated_membrane_protein_Anomala_cuprea_entomopoxvirus :0.0740):0.0132[12],
gi_506498161_ref_YP_008003958_1_IMV_membrane_protein_CopL1R_Adoxophyes_honmai_entomopoxvirus_L :0.1061):0.3335[99]):0.1061[87],(
gi_1046611057_ref_YP_009268780_1_imv_membrane_protein_Pteropox_virus :0.1542,(((
gi_288804151_gb_ADC53817_1_IMV_protein_Pseudocowpox_virus :0.0000,
gi_289183811_ref_YP_003457352_1_IMV_protein_Pseudocowpox_virus :0.0000):0.0304[96],
gi_738809426_ref_YP_009112786_1_putative_myristylated_IMV_envelope_protein_Parapox_virus_red_deer/HL953 :0.0219):0.0158[58],(((
gi_913203922_gb_AKU76536_1_Myristylated_IMV_envelope_protein_Orf_virus :-0.0021,
gi_325073842_gb_ADY76895_1_PP188_Orf_virus :0.0123):0.0011[46],
gi_41057110_ref_NP_957824_1_ORF047_putative_myristylated_IMV_envelope_protein_Orf_virus :-0.0011):0.0005[46],
gi_632123526_gb_AHZ33744_1_myristylated_IMV_envelope_protein_Orf_virus :-0.0005):0.0066[70],(
gi_41018534_gb_AAR98142_1_ORF047_putative_myristylated_IMV_envelope_protein_Orf_virus :0.0056, gi_74230759_gb_ABA00564_1_IMV_protein_Orf_virus :0.0148):0.0037[25]):0.0023[38]):0.0256[57],((
gi_41057483_ref_NP_957956_1_ORF047_myristylated_IMV_envelope_protein_Bovine_papular_stomatitis_virus :0.0000,
gi_806824899_gb_AKC03473_1_myristylated_IMV_envelope_protein_Bovine_papular_stomatitis_virus :0.0000):0.0000[97],
gi_806824640_gb_AKC03216_1_myristylated_IMV_envelope_protein_Bovine_papular_stomat

itis_virus :0.0000):0.0368[97]):0.0153[51],
gi_1215835349_ref_YP_009389333_1_myristylated_IMV_envelope_proteinlike_protein_Sea
l_parapoxvirus :0.0515):0.1480[99]):0.0399[67]):0.0687[78],()
gi_1158620761_gb_AQY16642_1_MC069_Molluscum_contagiosum_virus_subtype_2 :0.0111,
gi_9629001_ref_NP_044020_1_MC069R_Molluscum_contagiosum_virus_subtype_1
:0.0092):0.0661[98],((((
gi_659488260_ref_YP_009046122_1_myristylated_protein_Penginpox_virus :-0.0033,(
gi_9634798_ref_NP_039091_1_Myristylated_membrane_protein_Fowlpox_virus :-0.0038,
gi_221404_dbj_BAA00225_1_unnamed_protein_product_Fowlpox_virus
:0.0139):0.0237[87]):0.0100[85],
gi_659488498_ref_YP_009046359_1_myristylated_protein_Pigeonpox_virus
:0.0002):0.0456[96],
gi_946699633_ref_YP_009177112_1_myristylated_membrane_protein_Turkeypox_virus
:0.0693):0.0196[57],((gi_1173596344_gb_ARE67397_1_SWPV2ORF161_Shearwaterpox_virus
:-0.0009,
gi_40556111_ref_NP_955196_1_CNPV173_putative_myristylated_IMV_envelope_protein_Can
arypox_virus :0.0110):0.0244[85],
gi_1174036708_gb_ARF02733_1_SWPV1149_Shearwaterpox_virus
:0.0589):0.0251[65]):0.1153[99]):0.0303[73]):0.0660[71],
gi_571797980_ref_YP_008658479_1_myristylprotein/_IMV_protein_Squirrelpox_virus
:0.1769):0.0779[93],(((
gi_377829969_ref_YP_005296264_1_unnamed_protein_product_Cotia_virus_SPAn232
:0.0193, gi_1119035641_ref_YP_009329692_1_protein_L1_BeAn_58058_virus
:0.0426):0.0617[96],((gi_539191066_gb_AGU99738_1_m55R_Myxoma_virus :0.0000,
gi_9633691_ref_NP_051769_1_m55R_Myxoma_virus :0.0000):0.0002[83],
gi_9633864_ref_NP_051944_1_gp055R_Rabbit_fibroma_virus
:0.0099):0.1165[100]):0.0116[35],((((
gi_115503135_gb_ABI99053_1_myristylated_IMV_envelope_protein_Deerpox_virus_W117084
:-0.0003,
gi_62637446_ref_YP_227444_1_Myristylated_IMV_envelope_protein_Deerpox_virus_W84883
:0.0106):0.0117[91],((
gi_148912937_ref_YP_001293251_1_hypothetical_protein_GTPV_gp056_Goatpox_virus_Pell
or :0.0000, gi_154268989_gb_ABS72327_1_L1R_Goatpox_virus :0.0000):0.0105[94],
gi_15150499_ref_NP_150494_1_LSDV060_putative_myristylated_IMV_envelope_protein_Lum
py_skin_disease_virus_NI2490 :-0.0001):0.0091[79],
gi_21492513_ref_NP_659632_1_Myristylated_IMV_envelope_protein_Sheppox_virus
:0.0117):0.0524[96]):0.0207[58],(
gi_18640143_ref_NP_570217_1_SPV057_putative_myristylated_IMV_envelope_protein_Swin
epox_virus :0.0709,
gi_1237089682_ref_YP_009408015_1_Myristylated_IMV_envelope_protein_Eptesipox_virus
:0.1075):0.0106[21]):0.0081[22],(
gi_38229222_ref_NP_938315_1_60R_Yaba_monkey_tumor_virus :0.0387,
gi_12085043_ref_NP_073445_1_60R_protein_Yabalike_disease_virus
:0.0455):0.0413[82]):0.0421[62]):0.0487[81]):0.0622[92],(
gi_1236513682_ref_YP_009408468_1_IMV_membrane_protein_NY_014_poxvirus :0.0000,
gi_1236513479_ref_YP_009408266_1_IMV_membrane_protein_Murmansk_poxvirus
:0.0000):0.0452[99]):0.0106[50],
gi_345107256_ref_YP_004821421_1_IMV_membrane_protein_Yokapox_virus
:0.0491):0.0549[98],()
gi_1070062787_ref_YP_009282781_1_imv_membrane_protein_Skunkpox_virus :0.0000,
gi_1070099109_ref_YP_009281835_1_imv_membrane_protein_Volepox_virus
:0.0000):0.0205[95],
gi_831934516_ref_YP_009143396_1_IMV_membrane_protein_Raccoonpox_virus
:0.0000):0.0071[63]):0.0043[51],((
gi_90660326_gb_ABD97440_1_IMV_membrane_protein_Cowpox_virus :0.0000,
gi_325558042_gb_ADZ29423_1_IMV_membrane_protein_Cowpox_virus :0.0000):-0.0000[52],
gi_20178464_ref_NP_619885_1_CPXV099_protein_Cowpox_virus
:0.0000):0.0004[50]):0.0049[56],
gi_1210074512_emb_SNBS53955_1_CPXV099_protein_Cowpox_virus :0.0054):0.0044[56],(((
gi_29029580_gb_AAN78221_1_M1R_Monkeypox_virus :0.0000,

gi_17974993_ref_NP_536507_1_M1R_Monkeypox_virus_Zaire96I16 :0.0000):0.0000[52],
gi_300872703_gb_ADK39105_1_myristylprotein_Monkeypox_virus :0.0000):-0.0000[47],
gi_661921024_gb_AIE40517_1_myristylprotein_Monkeypox_virus
:0.0000):0.0098[62]):0.0005[29],
gi_562817396_gb_AHB35726_1_IMV_membrane_protein_Vaccinia_virus
:0.0103):0.0001[14], gi_22164677_ref_NP_671590_1_EVM072_Ectromelia_virus
:0.0104):0.0000[8], gi_6969736_gb_AAF33948_1_TL1R_Vaccinia_virus_Tian_Tan
:0.0000):0.0000[7], Query_247142 :0.0000):0.0000[4],
gi_66275885_ref_YP_232970_1_IMV_membrane_protein_Vaccinia_virus
:0.0000):0.0000[3],
gi_113195268_ref_YP_717398_1_IMV_membrane_protein_Taterapox_virus
:0.0000):0.0000[3], gi_1210075651_emb_SNBS56540_1_CPVX099_protein_Cowpox_virus
:0.0000):0.0000[3], gi_1210075080_emb_SNBS57671_1_CPVX099_protein_Cowpox_virus
:0.0000):0.0000[3], gi_732554838_gb_AIZ72837_1_IMV_membrane_protein_Vaccinia_virus
:0.0000):0.0000[3],
gi_9627594_ref_NP_042117_1_hypothetical_protein_VARVgp073_Variola_virus
:0.0000):0.0000[5],
gi_1143682_emb_CAA53878_1_unnamed_protein_product_Variola_virus :0.0000,
gi_18640320_ref_NP_570476_1_CMLV086_Camelpox_virus :0.0104);

Supplemental figure 1



Supplemental figure 2

